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ABSTRACT

A comprehensive directory of teaching and research activities in the field of science policy is presented in this book, compiled on the basis of a mail survey conducted among 770 North American institutions in 1972. The total of 302 completed questionnaires is analyzed to form a source of expertise for Members of Congress. Most activities are described as formal programs, and the remainder as course offerings and research projects. Interdisciplinary and traditional disciplinary approaches are commonly adopted in the institutions. In the directory, the institutions are grouped under the heading of States. Included in each entry are descriptions of programs and courses, levels of study, research areas, and comments from surveyed institutions. Activities of seven Canadian universities are incorporated in a separate section, and European science policy activities in universities are discussed. A list of programs funded by the National Science Foundation, together with grant amounts and expiration dates, is provided in the appendix. (CC)

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TEACHING AND RESEARCH IN THE FIELD OF SCIENCE POLICY—A SURVEY

STAFF STUDY

FOR THE

SUBCOMMITTEE ON SCIENCE, RESEARCH, AND DEVELOPMENT

OF THE

COMMITTEE ON SCIENCE AND ASTRONAUTICS
U.S. HOUSE OF REPRESENTATIVES
NINETY-SECOND CONGRESS
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LETTER OF SUBMITTAL

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND ASTRONAUTICS,
Washington, D.C., December 18, 1972.

Hon. JOHN W. DAVIS,
Chairman, Subcommittee on Science, Research, and Development, Science and Astronautics Committee, U.S. House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: I am forwarding herewith a staff study prepared for the use of the Subcommittee on Science, Research, and Development in accordance with your request and entitled "Teaching and Research in the Field of Science Policy—A Survey."

The work of compiling this survey was done by the committee staff with the aid of the Congressional Research Service. Dr. John Holmfeld organized and directed the survey. Miss Rosemary Chalk of the Science Policy Research Division, Congressional Research Service, edited the responses and wrote the introductory analysis.

Sincerely,

CHARLES F. DUCANDER,
Executive Director and Chief Counsel.

LETTER OF TRANSMITTAL

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND ASTRONAUTICS,
Washington, D.C., December 20, 1972.

Hon. GEORGE P. MILLER,
Chairman, Committee on Science and Astronautics, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: I am glad to submit to you the results of a survey of teaching and research in the field of science policy in the United States and Canada. The survey was conducted with the aim of collecting in one place a comprehensive directory of science policy activities in North American universities. It is also partly the result of the committee's close liaison with science policy groups, Government and non-Government, in the United States and Canada. As you know, in recent years the Subcommittee on Science, Research, and Development has devoted a good deal of attention to this subject and has had many useful contacts with both teachers and students of science policy. The committee's interests and activities in this subject apparently are being matched by a growing teaching and research interest in the academic community. It is my hope that this survey will serve to stimulate even more communication between the Members of the committee and the Congress and those individuals in the universities who have an active interest in science policy and that it also will provide useful information to Members of Congress regarding available sources of expertise on matters of science policy.

Sincerely yours,

JOHN W. DAVIS,
Chairman, Subcommittee on Science, Research, and Development.

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TEACHING AND RESEARCH IN THE FIELD OF SCIENCE POLICY—A SURVEY

Introduction and Summary

This survey of education and research activities in science policy deals with the evolving study of the interaction between science and Government in American colleges and universities. Federal funding has stimulated and accelerated the rapid growth of scientific research and development in the United States, and this research in turn has affected political decisions in many areas including those not usually associated with scientific matters.

The emerging field of science policy therefore has two dimensions: What should be the priorities within scientific research and development? And, how can policymakers and society best use the resources and products of science and technology? Congress in particular has developed in recent years a special interest in these questions as the committees and Members review the increased amounts of funding for scientific and technical research.

In 1970, the Subcommittee on Science, Research, and Development held extensive hearings to probe the perspectives and current thinking on science policy by various representatives from Government, industry, and universities throughout the country. These hearings revealed a need for problem-oriented approaches to various policy issues involving science and technology, and highlighted some of the available resources which might be combined to work on developing and pursuing these approaches. Since that time, several new policy issues have emerged. Examples in the 92d Congress include several major pieces of legislation built on new approaches to the problems of science and technology policy. The Office of Technology Assessment, created by the Technology Assessment Act of 1972, is one such attempt to institutionalize problem-oriented approaches and scientific resources in making policy choices. The National Science Policy and Priorities bill, on which hearings were held before the subcommittee in October of 1972, is another example involving a proposed organizational innovation which would apply systems management thinking to civilian technology problems.

During the 1970 National Science Policy hearings several witnesses indicated that the need for new institutional arrangements would simultaneously create a need for a new type of career staff. Dean Don K. Price of Harvard University noted that as Government begins to take seriously problems of a science policy nature, the arrangements which emerge will have to do more than just combine a system of department operations with part-time scientific consultants. Government has to "build up much more of a career staff system to balance things out together." In order to develop this career staff, he observed, educational programs must be formulated which will

break down departmental specializations and encourage interdisciplinary problem-oriented approaches to the public policy issues concerned with science, technology, and society. Price stated:

> Private universities can contribute something here because the very root of the problem I think is that within our fundamental educational system we tend to educate one category of people in basic scientific knowledge without giving them very much opportunity to learn how knowledge is converted into administrative action and political power; and on the other hand, we educate people in history, politics, economics with very little idea of the nature of science in the modern world. I think that we badly need—and this has been my obsession in the past few years in programs I have been trying to develop—we very badly need educational programs that build on the professional techniques of systems analysis and operations research, relate them to economic issue, relate them to the political and constitutional environment, and bring in effect the natural sciences and the social sciences together in ways that make operational sense and not in ways that merely relate to the development of abstract fundamental knowledge.[1]

This survey of activities describes how universities and other institutions are responding to the need for flexible and interdisciplinary approaches to policymaking for science and technology. The programs, courses, and research areas listed provide an initial framework for examining the forms of educational science policy activity, the variety of resources available, and the growing number of disciplines and faculty involved in this area.

Definition of Science Policy

In conducting the survey an effort was made to include the broadest possible representation of teaching and research activities in science policy. Consequently those contacted were given the following definition of what was to be considered within the scope of the survey.

> Science policy work is defined in its broadest sense to include factual, descriptive and analytical teaching and research on the relationship between science, technology, and society. For the purpose of this questionnaire it includes one or more of the following subjects: Science and Government; technology and society; science and the humanities; the economics, funding and organization of science and technology at the Federal, State and local level and in industry; and technology forecasting and assessment. Also included under the definition is teaching and research in special fields such as marine affairs, biology and society, pollution and environmental management, the energy crisis, etc.

[1] U.S. Congress. House. Committee on Science and Astronautics. "National Science Policy." Hearings before the Subcommittee on Science, Research, and Development. July, August, September 1970. 91st Congress, 2d session. (Washington: U.S. Government Printing Office)

Survey Method

The information contained in this report was gathered by means of a mail survey. A questionnaire outlining the particular questions to which answers were sought was designed and 500 copies were mailed in May of 1972. The list for this initial mailing was compiled from several sources. These included the mailing list for the Science and Public Policy Studies Group newsletter which was kindly made available to the committee, a list of engineering faculty with an interest in science policy teaching compiled by the Battelle Memorial Institute and published in Battelle's *Science Policy Reviews*, and several lists of individuals with an interest in science policy matters maintained by the committee. The questionnaire included a request for suggestions regarding additional persons with an interest in the subject who should be included in the survey. Based on answers to this request in the responses to the initial mailing, an additional 270 questionnaires were mailed in August of 1972. As a result of these two mailings totaling 770, a response of 302 completed questionnaires, in many cases more than one from the same institution, were received by the time the report went to press. This constitutes a 39-percent response.

Completeness of the Survey

As a result of the information gathering method described above the survey is necessarily incomplete. Although an effort was made to locate all teaching and research activities falling within the scope of the survey, there are undoubtedly important science policy efforts which are not included. This is because the committee did not know about them, because those contacted were not able to respond to our inquiry, or because communication failed. The committee invites those teachers and researchers not included in the present survey, as well as other appropriate persons, to report their activities so that they can be included in the event an updated survey is subsequently carried out.

The time at which the survey data was gathered was the spring and summer of 1972. Hence the information contained in the survey reflects in most cases the activities current in American colleges and universities at the end of the 1971–72 academic year. Changes in curriculum, research programs, and in faculty membership may have taken place since then so that the information presented will not, in all cases, reflect activities at the time of publication in December 1972.

Number of Science Policy Activities

Over 150 American universities and other educational and research institutions indicated that they had some science policy activity. These universities are located throughout 41 of the States, and are grouped primarily in California (15), Illinois (12), Massachusetts (11), New York (15), Ohio (8), and Texas (7). The District of Columbia also contains several organizations (14) which are engaged in science policy education and research activities—however, these are primarily Government institutions rather than universities.

About one-third of the universities (45) report that their activities are grouped into a formal program usually with a technology or

policy orientation. The remainder indicate that their activities are restricted to course offerings (123) and research projects (97).

Formal Programs

In a study prepared for the National Science Foundation in 1968, Lynton Caldwell, director of the Program on Science, Technology, and Public Policy at Indiana University, noted that:

> If there is a one best way to study public policy for science and technology, the authors of this syllabus have not found it. There are many approaches to the field of study. The advantages of some over others appear to depend in large measure upon the character of the institutions offering the instruction and upon the needs and backgrounds of the students.[2]

Much the same can be said with regard to the 50 formal programs reported in this survey. Some programs (such as Purdue's) are contained within a single department. Others (such as George Washington University) may be located in an in-between area of a particular college or school of the university. Still others (such as the University of Florida) are directed by interdisciplinary advisory committees from all parts of the university.

The range of activities constituting a formal program in science policy includes a wide variety of organizations, courses, research projects, faculty disciplines and subject areas. Several universities (such as MIT and Indiana University) reported more than one formal program, while others indicated that although a program had not been established on their campus, an informal study group involving faculty and students from separate disciplines was meeting regularly to discuss current issues in science policy (University of Michigan and Texas A. & M. University). To indicate the range of activities beyond the formal program at MIT, Eugene Skolnikoff, the Director of the MIT Science and Public Policy Program, commented that "in effect, MIT is becoming a science and public policy institution," with different courses and projects evolving both in and between many of the departments of the university.

Interdisciplinary Programs

A large majority of the programs and courses reported in the area of science policy are described as interdisciplinary, involving faculty and students from separate departments and colleges within the university. This approach to science policy education and research is frequently difficult to fit into the existing university structure and there is not complete agreement about the desirability of pursuing it. Lynton Caldwell commends this educational approach in his syllabus for advanced study in science policy:

> It will not be easy to fit the study of public policy for science and technology into the conventional disciplinary structure of universities. But the great importance of the issues with which this aspect of policy study is concerned gives hope that this task, which would seem to imply new relationships among the disciplines, will somehow be accomplished.

[2] *Science, Technology, and Public Policy.* A Syllabus for Advanced Study, vol. II. Prepared by Lynton K. Caldwell and William B. DeVille, with the assistance of a grant from the National Science Foundation. Indiana University, 1968. p. i.

> Although the authors have not been able to identify any one best approach to the study of public policy for science and technology, they are satisfied that all of the better approaches require a multidisciplinary synthesis. The difficulties of bridging disciplines and of discovering heretofore unperceived relationships among complex phenomena require more informational support and specialist advice than would ordinarily be required in graduate courses falling into well established disciplines. Not all university faculties will possess available combinations of knowledge and communication skill that will make feasible the development of curricula in this field of study. Unless there is a sharing of experience and information among universities, the growth of this important field may be unnecessarily retarded.[3]

But not all writers endorse this concept without some reservations. Harvey Brooks, dean of the Harvard Engineering Division, has warned that interdisciplinary programs may weaken or inhibit the true nature and purpose of the university:

> Universities should be concerned with the application of knowledge only insofar as it enriches their entire intellectual enterprise and contributes to the proper training of future leaders in the professions. Hence, their natural organization is along disciplinary lines, and the very word "discipline" carries the connotation of standards. A discipline is a certain mode of approach to the acquisition of knowledge and understanding. By its very nature it is partial; to some extent it sacrifices breadth for depth. This is not to say that interdisciplinary activities are unimportant; they provide the seed from which new disciplines may spring and are particularly important in training people to apply the fruits of learning to the needs of society.[4]

Disciplinary Approaches

Many of the courses and research projects described in this survey are based in the engineering or science departments of the universities. These activities, which are more often related to a specific technology rather than policy-oriented, represent the traditional disciplinary approach of the universities. Thus many university responses in this survey indicate that they have often expanded the content of a particular course to include the policy issues stemming from that technology, rather than setting up separate courses to study the common processes and forces involved with the policy aspects of scientific research and development. The California State University at San Jose, for example, offers an extensive interdisciplinary master's program in cybernetic systems. This program is based on the technology of cybernetics and how it relates to social, education, economic, and environmental systems, but it also offers courses on technology assessment and technology transfer.

Professor H. C. Clark at Rice University included the following statement in his survey response:

[3] Ibid. p. iii.
[4] *Science Policy and the University.* Edited by Harold Orlans. The Brookings Institution, Washington, D.C. 1968. p. 64-65.

New concepts in engineering geology involve Government environment policy. Time and again the issue of engineering decisions as they relate to Government science policy will be discussed. I am sure that this is the situation throughout the science engineering section of our university, and indeed, most universities.

Canada

A significant amount of science policy research and teaching is taking place in Canada, and a separate section of the survey is devoted to this area. While these activities are directed primarily to Canadian problems and developments, they are of interest to the committee because of the many exchanges and discussions with Canadian parliamentarians and Government officials which the committee Members have had in past years. These contacts include participation by a Member of the Canadian Parliament in the committee's 1971 panel in international science policy, a visit by Members of the committee to Toronto for discussions in 1971, and several other contacts in Washington and Toronto.

European Science Policy Activities

Although the present survey is confined to science policy activities in the United States and Canada it is well to take note of the most prominent activities in Western Europe. These groups interact with American researchers and teachers through exchanges of people and publications, which provide a valuable stimulus for both.

The Science Policy Research Unit of the University of Sussex in England offers an extensive teaching and research program under the direction of Christopher Freeman. This program is recognized by many in the science policy community as one of the most broad-based and dynamic groups involved in this field. The unit focuses most of its work on contemporary problems of policy for science and technology, and is also concerned with the historical evolution of the scientific community and of the advisory and executive organs of Government concerned with the formulation of science policy. A member of the Sussex unit reports that two other British groups are doing what might be said to be science policy work, though they are not specifically titled in that way. These include the liberal studies in science program headed by Professor Jevons at Manchester University and the science studies department directed by Dr. David Edge at the University of Edinburgh.

Other European universities are concerned with this area, and although smaller have many similarities to the Sussex group. The Studiengruppe für Systemforschung in Heidelberg under Helmut Krauch has a large program in systems analysis, and the University of Lund in Sweden has a unit directed by Steven Dedijer working on science policy problems.

TEACHING AND RESEARCH IN THE FIELD OF SCIENCE POLICY—A SURVEY

(7)/8

ALABAMA

UNIVERSITY OF ALABAMA
BIRMINGHAM, ALABAMA 35233

Formal Program None reported

Courses Offered

Environment Dept.
"Chemistry of Man's Environment"—B. H. Levedahl
"Physical Aspects of Man's Environment"—R. P. Bauman
"Population, Pressures and Man's Environment"—R. W. Hanson
"Technology and Man's Environment"—J. H. Appleton
"Environmental Monitoring"—G. B. Cline

Level Undergraduate

Research Areas None reported

UNIVERSITY OF ALABAMA
UNIVERSITY, ALABAMA 35486

Formal Program None reported

Courses Offered

Engineering School
"Engineering: A Cornerstone of Society"—J. H. Black
"Environmental Science and Engineering"—H. W. Ahrenholz
"Atmospheric Pollution"—W. C. Clements
"Introduction to Marine Science"—C. E. Brett

Level Undergraduate

Research Areas "Feasibility of Applying Remotely Sensed Data in the Management of Natural Resources and Improvement of Environmental Quality in Alabama'—H. R. Henry
"Compatibility of Subsurface Reservoirs with Injected Liquid Wastes"—D. R. Grubbs

ALASKA

No science policy programs, courses, or research areas reported.

85-808—73——2

ARIZONA

UNIVERSITY OF ARIZONA
TUCSON, ARIZONA 85721

Formal Program None reported

Courses Offered

Government Department
"Science and Public Policy"—Dean Schooler
"Environmental Politics"—Helen Ingram
"Public Policy"—Dean Schooler

Level Undergraduate and Graduate

Research Areas
"Perception of Environmental Threats and the Use of Science and Technology: Air Pollution and Flood Control in the Netherlands"—Dean Schooler
"Institutional Fragmentation in Water Policymaking and Innovation"—Helen Ingram
"The Response of Political Studies and Policy Analysis to Environmental Problems"—Institute of Government Research Project: Thomas Volgy, Clifton Wilson, Dean Schooler, Helen Ingram et al.

ARKANSAS

No science policy programs, courses or research areas reported.

CALIFORNIA

CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIFORNIA 91109

Formal Program None Reported

Courses Offered None reported

Research Areas
"The Role of Science and Technology in Development"—Harrison Brown
"Forecasting of Resource Consumption and Availability"—Harrison Brown

CALIFORNIA STATE COLLEGE
DOMINGUEZ HILLS, CALIFORNIA 90747

Formal Program Interdepartmental major field in foundations of natural science

Comments Established in 1966; located in School of Natural Sciences and Mathematics

Courses Offered

"American Science and Technology"—K. Gash, J. Imri and R. B. Fischer
"Foundations of Natural Science"—W. Armacost
"Impact of Physics on 20th Century Thought"—A. Evett

CALIFORNIA—Continued

CALIFORNIA STATE COLLEGE—Continued

Level Undergraduate

Research Areas Within broad area of science, man and society—R. B. Fischer

CALIFORNIA STATE UNIVERSITY, SAN JOSE
SAN JOSE, CALIFORNIA 95192

Formal Program Cybernetic Systems

Comments Established in 1968; offers an M.S. degree; interdisciplinary in nature and is administered from the Office of the Dean of the School of Social Sciences through a Director and an Advisory Committee representing the major academic units of the university, Director is Norman O. Gunderson.

Courses Offered

Cybernetic Systems
"The Technological Society"—Norman O. Gunderson
"Technology Assessment"—Norman O. Gunderson
"Technology Transfer"—Norman O. Gunderson
"Evolution of Technical Innovation"
"Futures Studies Survey"
"Information Management"
"International Telecommunications as Social Systems"
"Behavioral Cybernetics"
"Bio-cybernetics"
"Technology and Education Systems"
"Technology and Environmental Systems"
"Technology and Socio-Economic Systems"
"Technology and Organization Behavior"
"Cybernation and Man"—Ralph Parkman

Engineering School
"Engineering and Social Change"—Ralph Parkman

Level Graduate and Undergraduate

Research Areas "A Study of the Potential Use of Computer Simulation in Urban Planning"—Robert Mehler and Masoud Moradzadeh
"International Telecommunications as Social Systems"—Gerd Wallenstein
"The Operation and Construction of the Santa Clara County Housing Model"—Richard E. Brannin

UNIVERSITY OF CALIFORNIA, BERKELEY
BERKELEY, CALIFORNIA 94720

Formal Program None Reported

Courses Offered

Political Science Department
"Science, Technology and Politics"—Todd R. LaPorte
"Science and Politics"—Todd R. LaPorte

CALIFORNIA—Continued

UNIVERSITY OF CALIFORNIA, BERKELEY—Continued

Courses Offered—Continued

Engineering Dept.
"Contemporary Technology"—C. Susskind
"History and Impact of Technology on Society"—J.R. Whinnery
Mech. Engineering Dept.
"Technology and Society"—F. Hurlbut
Philosophy Dept.
"Philosophy of Science"—Scriven
"Philosophy of the Social Sciences"—Scriven
Biochemistry Dept.
"Biochemistry and Society"
Bacteriology and Immunology Dept.
"Community Health Aspects of Bacteriology and Immunology"—R. I. Mishell
"Introduction to Immunology"—R. I. Mishell
History Dept.
"The Scientific Revolution"—J. L. Heilbron
"Science since 1750"—R. Hahn
"The Atomic Bomb"—J. L. Heilbron
"Science and Society"—R. Hahn

Level Graduate and Undergraduate

Research Areas General research under Todd LaPorte
"A History of Atomic Physics"—J. L. Heilbron
"Impact of Formal Education in the Later Functioning of Health Care Professional Workers"—R. I. Mishell

UNIVERSITY OF CALIFORNIA, DAVIS
DAVIS, CALIFORNIA 95615

Formal Program None reported

Courses Offered

Physics Dept.
"Physics for Non-Science Majors"—Thomas Cahill; Creider
Geology Dept.
"Man and the Physical Earth"—C. Durrell
"Earthquakes and Other Earth Hazards"—R. Matthews
"Non-Renewable Natural Resources"—R. Matthews
"Environmental Geology and Land-Use Planning"—R. Matthews
Bacteriology Dept.
"Microbiology and Society"—M. P. Starr
Political Science Dept.
"Environmental Politics and Administration"—G. A. Wandesforde-Smith

CALIFORNIA—Continued

UNIVERSITY OF CALIFORNIA, DAVIS—Continued

Courses Offered—Continued

Political Science Dept.—Continued
- "Policy and Politics in Agriculture and Water"—C. M. Hardin
- "Public Policy and the Government Process"—L. L. Wade
- "Environmental Public Policy"—G. A. Wandesforde-Smith

Environmental Studies
- "Environmental Decision Making"—G. A. Wandesforde-Smith and S. Schwartz
- "Environmental Law"—G. A. Wandesforde-Smith
- "Environmental Health"—J. Kraus
- "Case Studies in Institutional Failure and Reform" G. Wandesforde-Smith
- "Limnology"—C. R. Goldman
- "Oceanography"—C. R. Goldman
- "Public Mechanisms for Controlling Land Use"—R. A. Johnson
- "Planning and Decision Making in Small Urban Communities"—A. Sokolow
- "Environmental Awareness"—R. Sommer
- "Methods of Analysis for Complex Systems"—S. I. Schwartz
- "Workshops on Environmental Problems"—L. O. Myrup
- "Internships in Environmental Management"—T. E. Dickinson
- "Environment Problems and Market Failure"—T. Dickinson and S. Schwarz

Level: Undergraduate and Graduate

Research Areas
- "Landmark Sites of National Importance"—J. H. Lipps
- "Environmental Politics and Decision Making in the Lake Tahoe Basin"—E. Costantini, G. A. Wandesforde-Smith, K. I. Hanf
- "Environmental Politics and Administrative Change in the Pacific Coast States"—G. A. Wandesforde-Smith
- "Land Use and Energy Flow in Society"—K. E. F. Watt
- "Environmental Decision Making in the Lake Tahoe Basin"—C. R. Goldman
- "Land Use Planning"—S. I. Schwartz
- "Analysis of Land Use Dynamics"—S. Schwartz, H. Dunning, T. Foin, and R. D. Lee

CALIFORNIA—Continued

UNIVERSITY OF CALIFORNIA, IRVINE
IRVINE, CALIFORNIA 92664

Formal Program None reported

Courses Offered

"Science and Public Policy"—R. E. Bickner
"Science and Society"—Carl Hufbaner
"Technology and Society"—Carl Hufbaner
"Science and Social Responsibility"—E. Lee
"Biology and Public Policy"—G. Stephens

Level Undergraduate

Research Areas None reported

UNIVERSITY OF CALIFORNIA, RIVERSIDE
RIVERSIDE, CALIFORNIA 92502

Formal Program None reported

Courses Offered

Political Science Dept.
"Government and Science"—Michael D. Reagan

Level Graduate

Research Areas "Societal Aspects of Geothermal Resource Development"—Michael D. Reagan, Don W. Brown, Henry Vaux, Jr.

UNIVERSITY OF CALIFORNIA, SAN DIEGO
SCRIPPS INSTITUTION OF OCEANOGRAPHY
SAN DIEGO, CALIFORNIA 92037

Formal Program Center for Marine Affairs

Comments Associated with the Institute of Marine Resources, and is concerned with post-doctoral training and research; offers no courses; established in 1970.

Courses Offered None reported

Research Areas "International Policymaking for Ocean Pollution"—Dennis Livingston, H. Russell Bernard, Michael Brenner
"Marine Science and International Pollution Policy"—W. S. Wooster
"Control and Utilization of Natural and Manmade Environmental Extremes"—G. L. Wick

UNIVERSITY OF SOUTHERN CALIFORNIA
LOS ANGELES, CALIFORNIA 90007

Formal Program School of Public Administration offers Master's program with areas of specialization in Marine Affairs and R&D Management.

CALIFORNIA—Continued

UNIVERSITY OF SOUTHERN CALIFORNIA—Continued

Comments R&D Management area established in 1968; Marine Affairs specialty begun in 1971, moving toward interdisciplinary program.

Courses Offered

Public Administration School

"Science, Technology and Government"—Ross Clayton

"Problems and Issues in Coastal Zone Management"—M. Moss

"Marine Affairs"—M. Moss

"Problems in Environment Management"—Frank Tysen

"R&D Management"—R. Kistler, Ross Clayton

"Behavioral Problems in R&D Management"—Ross Clayton

Level Graduate

Research Areas "Environmental Impact Statements"—Lyle Sumek

CHICO STATE COLLEGE
CHICO, CALIFORNIA 95925

Formal Program None reported

Courses Offered

Civil Engineering Dept.

"Engineering and the Technological Society"—John D. Teasdale

Level Undergraduate

Research Areas None reported

GOLDEN GATE UNIVERSITY
SAN FRANCISCO, CALIFORNIA 94105

Formal Program None reported

Courses Offered

Public Affairs Dept.

"Science, Technology and Public Policy"—F. Friedman

Level Undergraduate

Research Areas None reported

SCRIPPS COLLEGE
CLAREMONT, CALIFORNIA 91711

Formal Program None reported

Courses Offered

Science Dept.

"National Science Policy"—Jack Merritt

Level Undergraduate

Research Areas None reported

CALIFORNIA—Continued

STANFORD UNIVERSITY
STANFORD, CALIFORNIA 94305

Formal Program No specific science policy program reported, but several programs exist which cover policy issues in particular areas of science and society. These include the following:
(1) Values, Technology and Society (VTS)
(2) Telecommunications Program (Center for Interdisciplinary Research)
(3) Stanford Workshops on Political and Social Issues (SWOPSI)
(4) Program in weapons technology and disarmament—Stanford Linear Accelerator Center (SLAC)

Comments
(1) VTS: Begun in 1970, offering courses which emphasize the connections between various disciplines and the larger problems of man, society and nature; interdisciplinary faculty (six schools and fifteen departments); planning a four year curricula of two types, leading to a B.A. and B.S. relating to the general area of science, technology and society; Director is Robert McGinn.
(2) Telecommunications Program: Formally established in 1972; one of several programs within the Center for Interdisciplinary Research; Director is Donald Dunn.
(3) SWOPSI: A student-initiated and student-led program, designed to direct Stanford's curriculum to urgent social and political problems, and to seek ways of implementing proposed solutions through community education and political and social action; established in 1969; offers several courses and research studies; Director is Dan A. Lewis.
(4) SLAC: Provides resources to weapons technology and disarmament program; offers courses and plans public information services; resource people includes G. Craig, W. Panofsky, and J. Barton.

Courses Offered
Values, Technology and Society Program
"Comparative World Views and Scientific Thought"—Hutchinson, Cancior and Yearley

CALIFORNIA--Continued

STANFORD UNIVERSITY—Continued

Courses Offered—Continued
"A Communications Revolution"—W. R. Kincheloe, Jr.
"Introduction to Value, Technology and Society"—W. Vincenti
"Technology and Society: How Did We Get Here"—W. Vincenti
"Science, Politics, and Public Policy"—E. Hutchinson
Business School
"Science Policy"—E. Hutchinson
Engineering School
"Human Values in a Technological Society"—David Thompson
"Technology and Human Values"—David Thompson
Telecommunications Program*
"Telecommunications Systems and Public Policy"—Donald Dunn and Parker
"Economics of Public Works"—Donald Dunn
"Economics of Industry"—Manne and Rosse
"Mass Communications in Society"—Rivers
"Economics of the Mass Media"—Grey
"Educational Technology in Developing Countries"—Schramm
"Mass Media Law"—Grey
"Engineering Systems Design"—Lusignan
SLAC
"Science, Technology and Political Power"—Martin L. Perl
Political Science Dept.
"Technology and Political Order"—H. Evlan
SWOPSI
"Student Air Pollution Research"—Douglas Daetz, William Riley, David Blake, Christina Wood
"Technology and the Nonviolent Ethic"—D. H. Perkel, Rich Mendius, Ted Kaehler

Level — Graduate and Undergraduate

Research Areas
"Technology and Policy of Transportation and Construction"—C. Oglesby and V. Roggeveen
"Energy Policy Studies"—T. Connolly
"Energy Economics Systems"—D. Dunn
"Health Care Delivery Systems Analysis"—D. A. Thompson
"Definitive History of the Department of Scientific and Industrial Research (United Kingdom)"—Hutchinson
"The Scientific Community and the Making of National Technological Decisions"—Martin L. Perl

*These courses are not formally affiliated with the program but cover materials of related importance.

CALIFORNIA—Continued

STANFORD UNIVERSITY—Continued

Research Areas—Continued

"Communications Technology and Public Policy"—Dunn, Parker, and Rosse

Center for Advanced Studies in the Behavioral Sciences—conducting studies in planning and research, led by D. Kennedy, J. Hamburg and W. Paxter

NAVAL WEAPONS CENTER
CHINA LAKE, CALIFORNIA 93555

Formal Program None reported

Courses Offered The Center utilizes the resources and courses of the University of Southern California (see listing above).

Research Areas "The Science of Human Values"—Howard A. Wilcox

THE SALK INSTITUTE
SAN DIEGO, CALIFORNIA 92112

Formal Program The Salk Institute for Biological Studies
Council for Biology in Human Affairs

Comments Formally established in 1969; consists of a panel of biological and social scientists which meets periodically; Secretary General to the Council is Harry Boardman.

Courses Offered None reported

Research Areas "Study of Central Influences on American Life and Societal Features of Repetitive Drug Use"—J. Bronowski and Jacques Barzun

COLORADO

COLORADO STATE UNIVERSITY
FORT COLLINS, COLORADO 80521

Formal Program None reported

Courses Offered

Political Science Dept.

"Politics of Energy Policy"—R.M. Lawrence
"Current Environmental Problems"—Norman Wengert
"Legal Processes and Environmental Control"—Norman Wengert
"Politics and Policy in Natural Resources Administration"—Henry P. Caulfield and Norman Wengert
"Politics and Policy in Water Resources Planning and Management"—Henry P. Caulfield and Norman Wengert
"Management of Urban and Agricultural Water: National and International"—Duane W. Hill
"Politics of Pollution Control"—Norman Wengert

COLORADO—Continued

COLORADO STATE UNIVERSITY—Continued

Courses Offered—Continued

"Politics and Administration of Planning"—Norman Wengert

"Politics of Energy Policy"—Robert M. Lawrence

Politics of Outdoor Recreation"—Foss

Politics of Public Land Policy"—Foss

Public Policy Formation"—Caulfield, Foss, Wengert

The College of Forestry and Natural Resources also has several departments which offer courses related to Watershed Science, Watershed Management, and Bioclimatology.

Level — Graduate and Undergraduate

Research Areas

"Finance in Water and Related Land Resource Use and Development"—Henry P. Caulfield

"Water Resources Planning and Social Goals: Toward a New Methodology"—Henry P. Caulfield

"Social and Environmental Feasibility of Transfer of Selected Public Works Functions to the Underground Environment"—Duane W. Hill

"Social and Environmental Feasibility of Eight Alternative Solutions for Achieving Flood Control on Boulder Creek within Metropolitan Boulder"—Duane W. Hill

"Development and Testing of Alternative Measures of Social Costs and Benefits for Use in Evaluating Projects and Policies in Urban Water Management"—Duane W. Hill

"Metropolitan Water Intelligence Systems: Design Management and Operational Criteria for Reduction of Overflow in Combined Sewer Systems through Use of Automatic Controls"—Duane W. Hill

"Environmental Impact of Oil Shale Development in Garfield County"—Norman Wengert and Garth Jones

"Irrigation Systems: Their Operation and Evaluation"—Garth N. Jones

"Irrigation Management in Pakistan with Emphasis on Farm Water Management"—Garth N. Jones

"Socio-Political Impact of Oil Shale Development in Western Colorado"—Norman L. Wengert and Garth N. Jones

"Population and Land Use Control"—Norman L. Wengert

COLORADO—Continued

COLORADO STATE UNIVERSITY—Continued

Research Areas—Continued

"Institutions for Urban Water Planning, Development and Management"—Norman L. Wengert

"Water and Land Interrelationships in the Urbanizing Front Range of Colorado"—Norman L. Wengert

"Co-editing a Prospectus for the November 1973 issue of the *Annals* of the American Academy of Political and Social Science"—Norman Wengert and Robert M. Lawrence

UNIVERSITY OF COLORADO
BOULDER, COLORADO 80302

Formal Program None reported

Courses Offered

Engineering School

"Energy Generation and Utilization"—Jerrold H. Krenz

"Survival and Technology"—Jerrold Krenz

"Modern Life Sciences and Man's Ethical Dilemmas"—Gordon Ward

"Science and the Modern World"—L. Duane Bell

"Technological Impact in Perspective"—Betty Beck

Level Undergraduate

Research Areas None reported

UNIVERSITY OF DENVER
DENVER, COLORADO 80210

Formal Program University of Denver Research Institute
Industrial Economics Division

Comments Science policy research is conducted through the Industrial Economics Division, often with interdisciplinary participation from other Divisions; Programs include Technology Transfer Research and Impact Studies and Future Requirements Agency; science policy couses affiliated with the Institute are offered through the Colleges of Engineering and Law; Institute established in 1967; Head of the Industrial Economics Division is John Welles.

Courses Offered

College of Law

"Resources and Environmental Law"—John J. Schanz, Jr.

International Studies School

"Science, Technology and International Relations"—Edward Miles

Engineering School

"Technology and Public Policy"—J. S. Gilmore

"Cross Cultural Technology Transfer"—J. G. Milliken

COLORADO—Continued

UNIVERSITY OF DENVER—Continued

Level Graduate

Research Areas

"The International Decision-System for Outer Space"—Edward L. Miles

"The International Decision-System for the Oceans"—Edward L. Miles

"Technological Innovations in Video and Their Potential Impacts on Industry, Consumers and Government"—P. I. Bortz

"Technology Transfer Research and Impact Studies"—J. P. Kattenstatte

"Change Factors Affecting Telephone Company Decision-Making"—J. S. Gilmore

"Alternatives to Managing and Financing University Computers"—M. Robbins

"Impact of Newly-Emerging Scientific and Technical Information Services"—J. E. Freeman

"Oil Shale Economics and Policy Studies"—John J. Schanz, Jr.

"Future Gas Requirements of the United States"—John J. Schanz, Jr.

"U.S. and Canadian Trade in Energy Resources: Issues and Alternatives"—John J. Schanz, Jr.

"Planning of Rural Development Policy"—John S. Gilmore

"Implications of Reducing Physical Standards for Navy Recruits for Selected Career Specialties"—Anita West

U.S. AIR FORCE ACADEMY
COLORADO 80840

Formal Program None reported

Courses Offered

Economics Dept.
"Defense Economics"

History Dept.
"History of Science and Technology"

Law School
"Government Contract Law"

Management Dept.
"Management of Systems Development and Acquisition"—Major F. Theodore Helmer

Philosophy Dept.
"Introduction to the Philosophy of Science"

Physics Dept.
"Science and the Future"—Major Thomas J. O'Connor

Political Science Dept.
"Defense Policy"—Major Richard G. Head
"The Politics of Science"—Major Richard G. Head

Level Undergraduate

Research Areas None Reported

CONNECTICUT

UNIVERSITY OF CONNECTICUT
STORRS, CONNECTICUT 06268

Formal Program None reported

Courses Offered None reported

Research Areas Limited amount of individual research in this area is being conducted by Arthur B. Bronwell and George S. Campbell in the Engineering School and Wayne Shannon in the Political Science Dept.

RENSSELAER POLYTECHNIC INSTITUTE OF CONNECTICUT
HARTFORD, CONNECTICUT 06120

Formal Program None reported

Courses Offered
"R&D Management"—Joel Goldhar
"Technology, Social Change and Corporate Planning"—Joel Goldhar
"Environmental Planning"—McQueen
"Engineering in its Social Context"—Joel Goldhar

Level Graduate

Research Areas
"Technology Assessment Processes"—Joel D. Goldhar
"Processes and Characteristics of Technological Innovation in Industry"—Joel D. Goldhar

YALE UNIVERSITY
NEW HAVEN, CONNECTICUT 06520

Formal Program None reported

Comments: The Institution for Social and Policy Studies (ISPS) was reported as a fairly recently organized group; emphasis on multi-disciplinary approaches to problems and on policy formulation; some potential for exploring science policy issues, but at the present stage of development of this Institution the only area under study which involves the natural sciences and engineering is an environmental problems seminar.

Courses Offered
History of Science and Medicine Dept.
"History of Technology"—Derek J. de Solla Price
"Sociology and Politics of Recent Science"—Derek J. de Solla Price
"Science, Technology and Society"—Derek J. de Solla Price
Engineering and Applied Science Dept.
"The Application of Science"—P. Davidovits
Physics Dept.

CONNECTICUT—Continued

YALE UNIVERSITY—Continued

Courses Offered—Continued
"Topics in Science and Society"—J. Ginocchio
Biology Dept.
"Biology and Human Affairs"—A. W. Galston, R. A. Goldsby
Forestry Dept.
"Renewable Natural Resource Policy"—Worrell
"Sociology of Natural Resources"—Burch
Administrative Sciences Dept.
"Operations Research in Health Services"—Fishman
"Operations Research in Water Resource Management"—Sobel
Sociology Dept.
"Technology, Work, and Society"—Udy
ISPS
"Quantitative Approaches to Environmental Quality"—Walker, Burch, Stolwijk et al.
Residential College Seminar
"Politics and the Emergence of Modern Science"—P. D. Wolfowitz
Combined Sciences Dept.
"Multidisciplinary Seminar on Environment and Man"—C. A. Walker, B. R. Clark, J. Harte, A. T. Day et al.

Level Undergraduate and Graduate

Research Areas "Analysis of trends in science, as related to governmental policy"—Derek J. de Solla Price
"Statistical Studies of Citations, etc."—de Solla Price
"Preparation for a Textbook of Science Policy Studies"—de Solla Price

DELAWARE

UNIVERSITY OF DELAWARE
NEWARK, DELAWARE 19711

Formal Program Science, Technology and Society Program

Comments Formally established in the College of Arts and Sciences in 1972; directed by special interdisciplinary advisory committee, including membership from philosophy, history, physics, political science and sociology faculties, who work with associate dean for interdisciplinary programs; offers special courses and programs not included in regular university curricula; chairman is Dr. Paul Durbin, Philosophy Dept.

Courses Offered
Anthropology Dept.
"Material Culture"—Siroto

DELAWARE—Continued

UNIVERSITY OF DELAWARE—Continued

Courses Offered—Continued

Chemistry Dept.
"Chemistry and Environment"—Trumbore
Engineering Dept.
"Man-Made World"—Van Gelder
History Dept.
"Man Against Machine"—Ferguson
"Science Fiction as Social Criticism"—Basalla
"Technology and Western Civilization"—Ferguson
"History of Science"—Beer
Biological Sciences Dept.
"Ideas, Society, and Biomedical Science"—Lurie et al.
Philosophy Dept.
"Introduction to Philosophy of Science"—Durbin
Political Science Dept.
"Science and Public Policy"—Rich
Sociology Dept.
"Sociology of Sociology"—Rothman
"Readings in Health Care Delivery"—Rothman
Physics Dept.
"Medical Physics"

Level Undergraduate

Research Areas None reported

DISTRICT OF COLUMBIA

THE AMERICAN UNIVERSITY
WASHINGTON, D.C. 20016

Formal Program Science, Technology and Government Program

Comments Part of the School of Government and Public Administration under the College of Public Affairs; Director is Prof. Lowell H. Hattery

Courses Offered
"Science and the State"—Ruttenberg
"The Public Management of Science"—Sanders
"Science, Technology and International Affairs"
"Seminar in Science, Technology and Government"—Hattery
"General Symposium in Science, Technology and Government"—Hattery and Ruttenberg
"The Impact of Technology on Public Administration"—Hattery
"Seminar on Science—Technology Assessment"—Joseph F. Coates

Level Graduate

Research Areas "Technology Assessments in Corporations"—Lowell H. Hattery

DISTRICT OF COLUMBIA—Continued

GEORGETOWN UNIVERSITY
WASHINGTON, D.C. 20007

Formal Program None reported

Courses Offered
"Science, Technology and Politics"—Victor Ferkiss
"Study of the Future"—Victor Ferkiss

Level Graduate and Undergraduate

Research Areas None reported

GEORGE WASHINGTON UNIVERSITY
WASHINGTON, D.C. 20006

Formal Program Science, Technology and Public Policy

Comments Graduate teaching programs in the School of Public and International Affairs (SPIA) and National Law Center (NLC); formally established in 1970; other courses offered throughout the university; research centered in the Program of Policy Studies in Science and Technology; Program Director is John M. Logsdon, Assistant Professor of Public Affairs and Political Science.

Courses Offered
SPIA
"Science, Technology and Politics"—Logsdon
"Government, Science and Technology"—Logsdon
"Science, Technology and Public Affairs"—Logsdon
"Science, Technology and World Order"—John Hanessian
NLC
"Science and the Legal Process"—H. P. Green
"Science Policy Formulation"—Fred Anderson
"Control and Use of Atomic Energy and Space Technology"—George Gleason
"Legal Protection Against Technological Hazard"—Paul G. Dembling
"Intergovernmental Aspects of Technological Change"—James Brown

Level Graduate and Undergraduate

Research Areas "The Space Program During the 1970's: An Analysis for Policy-Making"—Logsdon
"Changing National Priorities and Public Policy for Science and Technology"—Logsdon

DISTRICT OF COLUMBIA—Continued

HOWARD UNIVERSITY
WASHINGTON, D.C. 20001

Formal Program None reported

Courses Offered
"Social and Technological Influences Upon Public Policy"—Joseph D. Cooper

Level Graduate

Research Areas Independent studies related to technological innovation, research goals and priorities, systems for delivery of medical care, and regulatory policy governing pharmaceutical innovation—J. D. Cooper

DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
TECHNICAL ANALYSIS DIVISION
WASHINGTON, D.C. 20234

Research Areas "Intergovernmental Technology Sharing"—Louis C. Santone

DEPARTMENT OF STATE
BUREAU OF INTERNATIONAL SCIENTIFIC AND TECHNOLOGICAL AFFAIRS
WASHINGTON, D.C. 20520

Courses Offered
Foreign Service Institute
"Science, Technology and Foreign Affairs"—John Bowling
"Computers and Foreign Affairs"

Research Areas
Office of External Research, Bureau of Intelligence and Research
"The Japanese Computer Industry"—National Academy of Sciences
"The Potential Foreign Trade Impact on Major U.S. Industries of Higher Levels of Environmental Protection"—Booz, Allen Public Administrative Services, Inc.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CONTRACTS AND PROCUREMENT DIVISION
WASHINGTON, D.C. 20591

Research Areas Research interests in the policy and procedural aspects of Federal funding of science and technology through R&D contracting—Joseph Leo

NATIONAL ACADEMY OF ENGINEERING
COMMITTEE ON PUBLIC ENGINEERING POLICY
WASHINGTON, D.C. 20416

Research Areas Study for the National Science Foundation on priorities for the Research Applied to National Needs Program—Edward Wenk, Jr., M. Naftalin, et al.

DISTRICT OF COLUMBIA—Continued

NATIONAL ACADEMY OF PUBLIC ADMINISTRATION
WASHINGTON, D.C.

Research Areas "Conference on Technology Assessment in State Government"—Richard Chapman
"NASA Program and Project Managers"—Richard Chapman
"Case Study of Surveyor and Lunar Orbiter—Richard Chapman
"International Aspects of NASA Tracking Program"—Richard Chapman

NATIONAL ACADEMY OF SCIENCES
WASHINGTON, D.C. 20418

Research Areas Wide variety of research projects and studies sponsored by the following:
Committee on Science and Public Policy
Committee on Public Engineering Policy
Environmental Studies Board
Panel on Health Services
National Board on Graduate Education

NATIONAL SCIENCE FOUNDATION
WASHINGTON, D.C. 20550

Formal Program Several offices and programs within NSF support science policy programs and studies, through contracts or grants to universities and other researchers. These offices include the following: Office of Planning and Policy Analysis, Research Applied to National Needs Program, Office of Intergovernmental Science Programs, Public Understanding of Science Program, Advanced Science Education Program, and the Science Policy Research Section, Division of Social Sciences.

Comments Although these various units do not themselves undertake science policy teaching and research activities, most of their projects deal with aspects of science policy, and many of their staff participate on a continuing basis in numerous activities in the science policy area. A sampling of these projects supported by NSF are indicated below:

Research Areas "Alternative Public Policies Affecting the Use of Technology"—supported by the Office of Planning and Policy Analysis; Investigator is J. H. Hollomon, MIT

DISTRICT OF COLUMBIA—Continued

NATIONAL SCIENCE FOUNDATION—Continued

Research Areas—Continued

"Studies and/or Reviews of Selected Fields of Science"—supported by the Office of Planning and Policy Analysis; Investigator is NAS–NAE

"Preparation and Printing of Bibliography: *Science, Technology and Public Policy*"—supported by the Office of Planning and Policy Analysis; Investigator is Lynton K. Caldwell, Indiana Univ.

"The Role of State Government in Stimulating Development Through Science and Technology: Recommendations for the Formulation and Implementation of a Science Policy for Tennessee"—supported by the Office of Intergovernmental Science Programs; Investigator is Alvin Biscoe, Jr., Univ. of Tennessee

"Program on Social Management of Technology"—supported by the Office of Policy Studies; Investigator is Edward Wenk, Jr., Univ. of Washington

"Program on Science, Technology and Society"—supported by the Office of Policy Studies; Investigator is Franklin Long, Cornell Univ.

"Seminar Series: Public Policy and the Direction of American Science and Technology"—supported by the Public Understanding of Science Program; Investigator is Estelle Ramey, Georgetown Univ.

"Interdisciplinary Graduate Program in Policy Analysis"—supported by the Advanced Science Education Program; Investigator is Percy H. Tannenbaum, Univ. of California, Berkeley

BUREAU OF SOCIAL SCIENCE RESEARCH, INC.
WASHINGTON, D.C. 20036

Research Areas

"Operation of the Competitive RFP System for Evaluation Studies"—Albert D. Biderman and Laure M. Sharp

"Kinostatistics for Social Indicators"—Albert D. Biderman and Barry M. Feinberg

"Professionals and Drugs: Communications and Activities"—Albert E. Gollin

INSTITUTE FOR THE FUTURE
WASHINGTON, D.C.

Research Areas

"Technology Assessment (as exemplified by the social technology of no-fault automobile insurance)"—Selwyn Enzer

DISTRICT OF COLUMBIA—Continued

INSTITUTE FOR THE FUTURE—Continued

Research Areas—Continued

"The Implication of Societal Developments for Long-Range Planning in the Chemical Industry"—Roy Amara and Andrew Lipinski

BROOKINGS INSTITUTION
WASHINGTON, D.C. 20036

Formal Program Advanced Study Program (includes "Conferences for Science Executives" and the Brookings–AAAS Science Seminars for Members of Congress and congressional staff)

Comments Advanced Study Program is an interdisciplinary educational activity, drawing on Brookings staff, academicians from different disciplines and universities, and government and business executives as resource people; Conferences established in early 1960's; Director is James M. Mitchell

Courses Offered

"Conferences for Science Executives"—Eric Bubeck et al.
"Brookings–AAAS Seminars for Members of Congress and Congressional Staff"—James M. Mitchell and Eric Bubeck
"Environmental Policy Seminar"—Brookings staff
"Health Policies"—Brookings staff

Research Areas "International Institutions and American Foreign Policy: The Impact of Technological Change"—Larry Fabian and Seyom Brown
"Government-sponsored Social Research"—Harold Orlans

FLORIDA

FLORIDA STATE UNIVERSITY
TALLAHASSEE, FLORIDA 32306

Formal Program None reported

Courses Offered

Government Dept.
"Government and Science"—Paul J. Piccard
Philosophy Dept.
"Philosophy of the Natural Sciences"—David Gruender
Physics Dept.
"Physical Society"—G. Schwarz
History Dept.
"Science and Western Civilization"—M. M. Vance

Level Graduate and Undergraduate

Research Areas "Explanation in the Sciences"—David Gruender

FLORIDA—Continued

FLORIDA TECHNOLOGICAL UNIVERSITY
ORLANDO, FLORIDA 32816

Formal Program None reported

Courses Offered

Engineering College
"Engineering in Human Affairs"—Robert D. Kersten
"Technology and Social Change"—Robert D. Kersten

Level Undergraduate

Research Areas None reported

UNIVERSITY OF FLORIDA
GAINESVILLE, FLORIDA 32601

Formal Program Committee on Technology and Society

Comments Focus on interdependence of technology and society; committee established by Engineering College but membership from many colleges; primary function is course coordination.

Courses Offered

Law School
"Legal Protection of the Environment"—Joseph W. Little
"Seminar on Highway Transportation"—Joseph W. Little

Environmental Sciences
"Politics of the Environment"—Walter A. Rosenbaum
"Economics of the Environment"—Paul E. Roberts, Jr.
"Ecology"—Ariel Lugo
"Environmental Engineering"—Howard T. Odum
"Introduction to Environmental Resource Systems"—James Heaney and S. Smedakev
"Wildlife Ecology"—George W. Cornwell

Engineering School
"Man, Civilization and Technology"—Gaither
"Technology and Survival"—Block
"Cybernetics and Society"—Lambert and Cox
"Nuclear Technology in Modern Life"—Campbell
"Man Made World"—Durling and Schaefer

Level Law School and Undergraduate

Research Areas Wide variety of research efforts respecting some aspect of technology assessment or the broader concept of science policy.

GEORGIA

GEORGIA INSTITUTE OF TECHNOLOGY
ATLANTA, GEORGIA 30332

Formal Program None reported

Courses Offered

Social Science Dept.

"Science, Technology and Human Values"—John Hines
"Introduction to the History of Science and Technology"—James E. Brittain
"Technology and Economic Change"—Melvin Kranzberg
"Survey of Science in the 16th & 17th Centuries"—James E. Brittain
"Survey of Science in the 18th & 19th Centuries"—James E. Brittain
"History of Engineering"—Melvin Kranzberg
"Philosophy of Science"—Fred Rossini
"History of Technology in the United States"—Melvin Kranzberg
"History of Electrical Science and Technology"—James E. Brittain
"Selected Topics in the History of Science"—Staff
"Selected Topics in the Philosophy of Science"—Staff
"Science, Technology and Public Policy"—Sandra Thornton
"Science, Technology and World Politics"—Sandra Thornton
"Technology and Society"—Morris Mitzner

Level Undergraduate

Research Areas None reported

UNIVERSITY OF GEORGIA
ATHENS, GEORGIA 30601

Formal Program None Reported

Courses Offered

College of Agriculture

"Agriculture Policy"—Dr. John Nixon
"Agricultural Programs and Policy"—Dr. Fred Saunders

College of Arts and Sciences

"Conservation Ecology and Resource Management"—Howard Daugherty
'Mineral Resources and the Environment"—Serge Gonzales
"Ecology Seminar"—Eugene P. Odum and staff

School of Forest Resources

"Forest Resources History and Policy"—Archie Patterson

GEORGIA—Continued

UNIVERSITY OF GEORGIA—Continued

Courses Offered—Continued

"Socio-political Aspects of Forest Resources Management"—Richard Jones

"Forest Land Use Planning"—Staff

School of Law

"International Law"—Dean Rusk

"Current Problems in International Law"—Dean Rusk

Level — Graduate and Undergraduate

Research Areas

"Citizen's Guide for Participation in Water and Related Natural Resources Management and Protection in Georgia"—J. Owen Smith

"Local Government Policy Perceptions and Responses to Water Problems in Georgia"—Vincent L. Marano

"Role of International Law in the Protection of the Environment"—Lindsey Cowen

"Planning Concept for the Coastal Zone"

"Identification and Quantification of the Effects of Intensive and Multiple-purpose River Basin Development"—Ronald M. North

"Evaluation of Benefit-Cost Estimation of the Ecologic and Economic Impacts from Water Resources Conservation and Development"—Ronald M. North and A. Sydney Johnson

"Status and Functional Relationships of the Natural Resources of Cumberland, Georgia"—A. Sydney Johnson

"Design of A Program for Research in Marine Environmental Quality"

"A Study Program to Identify Problems Related to Oceanic Environmental Quality—North Atlantic"

HAWAII

No science policy programs, courses or research areas reported.

IDAHO

No science policy programs, courses or research areas reported.

ILLINOIS

BRADLEY UNIVERSITY
PEORIA, ILLINOIS 61606

Formal Program None reported

Courses Offered
"Government and the Environment"—Eyland A. Washington
Physics Dept
"Perspectives on Physics"—J. Kenny

Level Graduate

Research Areas "Urban Electrical Energy Consumption in Peoria, Illinois"—John Kenny

DEPAUL UNIVERSITY
CHICAGO, ILLINOIS 60614

Formal Program None reported

Courses Offered
Environmental Science Dept.
"The Atmosphere and the Oceans"—D. O. Van Ostenburg
"Nuclear Energy and/or Society"—E. Schillinger
"Problems in a Technological Society"—A. Blumberg and F. Breitbill
Engineering School.
"Man and Systems: The New World of Cybernetics"—R. Ogden
Biology Dept.
"Selected Topics in the Life Sciences"
"Plants and Man"—M. A. Murray

Level Undergraduate

Research Areas "Effects of Waste Heat on the Biota of Lake Michigan"—M. A. McWhinnie, T. Murphy and R. Ogden
"Antarctic Research"—M. A. McWhinnie

ILLINOIS INSTITUTE OF TECHNOLOGY
CHICAGO, ILLINOIS 60616

Formal Program E^3: Education and Experience in Engineering

Comments Program is an experimental undergraduate program, educating engineers as interdisciplinary problem solvers with heavy emphasis on "science policy"; no courses given; uses small groups (vertically grouped) with faculty "coaches" and graduate interns; instruction is based on self-paced learning; offers B.S. in Engineering; 4-year program; Director is T. P. Torda; established in 1971.

ILLINOIS—Continued

ILLINOIS INSTITUTE OF TECHNOLOGY—Continued

Courses Offered
None reported (see comments)

Level Undergraduate

Research Areas None reported

UNIVERSITY OF ILLINOIS AT CHICAGO CIRCLE
CHICAGO, ILLINOIS 60680

Formal Program None reported

Courses Offered
"Social Institutions—Interorganizational Relations of Universities and Funding Agencies"—Robert L. Hall
"Sociology of Science"—Daniel Amick
Systems Engineering Dept.
"Principles of Systems Engineering"—Engel, Agarwal, O'Neill, Nihan, Walbridge, Bammi
"Senior Design"—Miller, Nihan, Walbridge, Engel, Agarwal, O'Neill and Bammi
"Urban Systems"—Nihan, Walbridge, and Gur
"Urban Transportation Models"—Nihan, Walbridge, and Gur
"Urban Transportation Systems Planning"—Nihan, Walbridge, and Gur
"Modeling in Socio-Technical Systems"—Engel, Agarwal, O'Neill, Miller and Nihan
Materials Engineering Dept.
"Particulate Solids Processing"—Geiger
"Physical-Chemical Principles of Soil Behavior"—Moore and Silver
Energy Engineering Dept.
"Engineering Hydrology"—Minkowicz
"Introduction to Environmental Pollution Control"—Babcock
"Direct Energy Conversion"—Pierson
"Atmospheric Motions"—Chow
"Senior Design"—Simon

Level Graduate and Undergraduate

Research Areas
"Interactive Transportation Analysis System"—Gur
"Effect of Characteristics upon Vehicle Pollution Emission—Gur
"Technical Programs and Offerings in 15 Selected Chicago Community or Junior Colleges"—Kohler
"Regional Role of Engineering Education"—Nihan
"Planning Needs for DuPage County Transportation Study"—Nihan
"Restructuring of Police Reporting System and Subsequent Implementation"—Miller

ILLINOIS—Continued

UNIVERSITY OF ILLINOIS AT CHICAGO CIRCLE—Continued

Research Areas—Continued

"The Transit-Oriented City, Development of the Mathematics of Synchronous Networks"—Walbridge

"Security in PRT Stations—Implications for Station Design"—Walbridge and Bammi

"Interorganizational Relations Between Universities and Funding Agencies"—Robert L. Hall

"Objective Linkages Between Universities and Agencies"—R. L. Hall and Daniel Amick

"Interaction Between Sediments and Nutrients"—Silver

"Dynamic Properties of Soils under Earthquake Build-up"—Silver

"Computer Aided Interpretation of Air Pollution Data, and Related Computer Graphics"—Weins

"Particulate Solids Processing"—Geiger

"Metallurgical Processes for Air Pollution Inspectors, Officials, and Students"—Geiger

"Chicago Tunnel Study—Movement of Freight, Solid Waste and Mail"—Silver

"The Atmosphere as a Source of Lead Contamination in Lake Michigan"—Cogley and Chung

"Destruction of Bacteria and Viruses during Waste and Recycle Water Treatment by a Non-Polluting Oxidizing Agent"—Hacker and Guttman

"Incineration of Plastic Packing Materials"—Babcock

"On Site Incineration"—Babcock

"Air Pollution. Energy Use and Urban Form"—Babcock

"Preparation of Lectures on Air Resource Management Aspect of Regional Land Use Planning"—Babcock

"Air Pollution Modelling: Integration of Technical and Socio-Economic Considerations"—Babcock

"Evaluation of Air Borne Particulate Matter"—Babcock

"Human Motor Coordination"—Agarwal

"Mathematical Programming Model of Land Use Allocation"—Bammi

"Design of Police Beats to Minimize Average Response Time to Calls for Service"—Bammi

ILLINOIS—Continued

UNIVERSITY OF ILLINOIS
URBANA, ILLINOIS 61801

Formal Program None reported

Courses Offered

Life Sciences Dept.
"Introduction to Human Ecology"—N. D. Levine
"Problems in Human Ecology"—N. D. Levine
Engineering School
"Environmental Resources Management"—J. Pearson
"History of Engineering"—R. Jewett
"Engineering Aspects of Contemporary Society"—R. Jewett
"Engineering Influence on Business Decisions"—A. Ness
Political Science Dept.
"Law and Politics of Environmental Protection"—S. Nagel
"Law, Policy, and Social Science"—S. Nagel
"Contemporary Governmental Problems (Population Policy)"—P. Bock and B. Rundquist

Level Undergraduate and Graduate

Research Areas
"Effects of Alternative Legal Policies"—S. Nagel
"The Impacts of State Air Pollution Control"—S. Nagel and Steve Andes
"Task Group on Animal and Human Metabolic Wastes"—R. Boggess
"Environmental Pollution by Lead and Other Metals"—H. Laitinen
"Natural Resource Inventory System"—P. Alsberg
"Illinois Resource Information System"—P. Alsberg
"Environmental Consequences of Energy Consumption"—B. Hannon
"Effects of Oil Import Restrictions on Sulfur Oxide Pollution Control"—M. Reiber
"Effect on Employment of Environmental Protection Regulation"—K. Johnson

LAKE FOREST COLLEGE
LAKE FOREST, ILLINOIS 60045

Formal Program None reported

Courses Offered

"The Energy Crisis"—Faber
"The Military Industrial Establishment"—Galloway
Biology Dept.
"Marine Biology"—Weik Louch
"Special Problems in Ecology"—Weik Louch

Level Undergraduate

Research Areas None reported

ILLINOIS—Continued

LOYOLA UNIVERSITY OF CHICAGO
CHICAGO, ILLINOIS 60611

Formal Program None reported

Courses Offered

Anthropology Dept.
"Social Institutions"
History Dept.
"Science, Technology and Society in Early Modern Europe"
"Science, Technology and Society since 1800"
"European Society in Age of Crisis, 1500–1650"
"Capitalism and Socialism"
"Science in America: The Nineteenth Century"
"History of Scientific Thought, 1500–1800"
"Ancient and Medieval Scientific Thought to 1500"
Philosophy Dept.
"Philosophy of Science"
"Philosophy of Social Science"
"Philosophy and the Human Sciences"
Political Science Dept.
"Government and Special Interests"

Level Undergraduate

Research Areas None reported

NORTHERN ILLINOIS UNIVERSITY
DE KALB, ILLINOIS 60015

Formal Program None reported

Courses Offered

"General Ecology"
Physics Dept.
"Physics and Society"
Political Science Dept.
"Seminar in Current Problems: American Ecosystems"—Thomas Wiegele

Level Graduate and Undergraduate

Research Areas Several discreet projects by Center for Governmental Studies.

NORTHWESTERN UNIVERSITY
EVANSTON, ILLINOIS 60201

Formal Program Program of Research on the Management of Research and Development

Comments Program is an integral part of the Dept. of Industrial Engineering and Management Science of the Technological Institute; involves interdisciplinary participation; established in 1959; involves graduate students and post-doctoral staffing; focused specifically on increasing the understanding

ILLINOIS—Continued

NORTHWESTERN UNIVERSITY—Continued

Comments—Continued
of the R&D management process through basic and applied research projects; Director is Albert H. Rubenstein.

Courses Offered
Annual seminar in Organization of R&D
"Management of Technological Innovation"—S. Doctors

Level Graduate

Research Areas
"Idea Flow in R&D"—Albert H. Rubenstein
"Control of R&D in Decentralized Organizations"—Michael Radnor
"Strategies for Organization and Diffusion of Research in Developing Countries"—Albert H. Rubenstein
"Lincott; Liaison, Interface, Coupling and Technology Transfer between Phases of Research, Development and Applications"—Albert H. Rubenstein
"The Information-Seeking Behavior of Researchers"—Robert D. O'Keefe and Charles W. N. Thompson
"Project Selection in R&D"—William E. Souder
"Environmental and Management Factors Influencing the Performance of R&D Groups"
"Methodology of Research on Research"

ROOSEVELT UNIVERSITY
CHICAGO, ILLINOIS 60605

Formal Program None reported

Courses Offered
"Physical Universe"—M. Goran
History Dept.
"History of Science"—M. Goran
Political Science Dept.
"Science Policy and Administration of Scientific Projects"

Level Undergraduate and Graduate

Research Areas "Science, Technology and Public Policy"—M. Goran

SOUTHERN ILLINOIS UNIVERSITY
CARBONDALE, ILLINOIS 62901

Formal Program None reported

Courses Offered
"Science, Technology, and Foreign Affairs"—Trivers

Level Graduate

Research Areas "Three Crises in American Foreign Affairs and a Continuing Revolution"—Trivers

ILLINOIS—Continued

SOUTHERN ILLINOIS UNIVERSITY
EDWARDSVILLE, ILLINOIS 62025

Formal Program None reported

Courses Offered

Engineering Dept.
"Technology and Society"—Julius Brown
Government Dept.
"Public Policy Analysis—Science and Technology"—Anton G. Jachim

Level Graduate

Research Areas None reported

INDIANA

INDIANA UNIVERSITY
BLOOMINGTON, INDIANA 47401

Formal Program (1) Program on Science, Technology and Public Policy
(2) Environmental Studies Program

Comments (1) Program on Science, Technology and Public Policy was originally established in 1965 within the Dept. of Political Science, and in association with the Institute of Public Administration; the Program is now an integral part of the School of Public and Environmental Affairs, which was established in early 1972; includes research and graduate education, multi-disciplinary basis; assisted by the National Science Foundation through a grant for the development of curricula in the social impact of science and technology; Director is Lynton K. Caldwell.
(2) Environmental Studies is an interdepartmental program designed to introduce students to environmental problems associated with modern civilizations; includes a multidisciplinary study of environmental forces; students who major in this program must also complete a major in an established discipline, Director is Craig E. Nelson.

Courses Offered

School of Public and Environmental Affairs
"Science, Technology & Public Policy"—Lynton K. Caldwell
"Political Aspects of Environmental Management"—Lynton K. Caldwell
"Environment and Man"—Toufiq A. Siddiqi
"Environmental Studies Seminar"—Toufiq A. Siddiqi

INDIANA—Continued

INDIANA UNIVERSITY—Continued

Courses Offered—Continued

"Heredity, Evolution, and Society"—Tracy M. Sonneborn

"Problems and Policy in Science and Technology"—Nicholas B. Mullins

"Sociology of Science"—Nicholas B. Mullins

"Science Reporting"—Ken Jackson and Keith Stamm

"Environmental Administration"—Lynton K. Caldwell

"Impact of New Technologies on Society and the Environment"—Toufiq A. Siddiqi and Lynton K. Caldwell

"Environmental Systems and Simulations"—Toufiq A. Siddiqi

"Science, Technology and Society"—Nicholas B. Mullins

Many other courses at the University deal with selected aspects of environmental management.

Level: Graduate and Undergraduate

Research Areas:

"Science, Technology and Public Policy"—Lynton K. Caldwell

"Project on the National Science Advisory System"—Nicholas C. Mullins

"Research on Environmental Systems and Simulations"—Toufiq A. Siddiqi

"Research on Technology Transfer"—James B. Utterback

"Increasing Public Understanding of Science"—Kenneth M. Jackson

PURDUE UNIVERSITY
LAFAYETTE, INDIANA 47907

Formal Program: Program in Science, Technology and Public Policy

Comments: Established in 1965; consists of five faculty members in the Department of Political Science, engaged in teaching courses in the area of science policy; program includes research & advanced graduate courses; Director is Joseph S. Haberer.

Courses Offered

Political Science Dept.

"Introduction to Science and Government"—Heather W. Johnston

"The Politics of Bureaucracy"—Richard L. Haines

"Science, Technology and Public Policy"—Heather W. Johnston

"Natural Resources and Public Policy"—Kenneth M. Friedman

"Science and the City"—Kenneth M. Friedman

"Proseminar in Public Policy and Processes"—Richard L. Haines

INDIANA—Continued

PURDUE UNIVERSITY—Continued

Courses Offered—Continued
"Research Seminar on Science and World Politics"—Joseph S. Haberer
"The Politics of Professionalized Science"—Joseph S. Haberer
"Proseminar in Science, Technology and Politics"—Joseph Haberer
"Selected Problems in International Relations (Science Policy)"—Galey
"Technology Assessment for Public Policy"
"Organization and Management of R&D"
Sociology Dept.
"Sociology of Science and Technology"—Hirsch
"Technology and Industrial Organizational Behavior"—Bain
History Dept.
"Scientific Revolutions"—Foley
Economics Dept.
"Manpower Resource"—Baum and Ullman
Interdisciplinary Courses
"Energy and Man"—D. B. Miller
"Interdisciplinary Aspects of Public Transportation"—W. L. Grecco
"Environmental Engineering"—D. P. Kessler
"Seminar in Science and Culture"—W. Hirsch
"Man, Drugs and Chemicals"—T. Miya
"The Impact of Science on Society"—J. R. Rice

Level — Graduate and Undergraduate

Research Areas
"Nationalism and Internationalism in Science"—Joseph Haberer
"Survey of Political Attitudes and Involvement of American Scientists"—Joseph Haberer
"Transportation"—Richard Haines, K. W. Heathington
"International Science Organizations"—Margaret Galey
"Air Pollution Control"—J. E. Etzel
"Optimal Detection and Prevention Systems to Pollution"—Rene Manes, D. C. Olson, Gordon Wright
"Environmental Education"—D. Malone, J. Barth, R. Giese, L. Trachtman, W. Brooks, et al.
"Environmental Toxicology"—Tom Miya
"Large-Scale Systems"—Sweet, Schiff, Bogdanoff, et al.
"Noise Pollution—Effect on Physiological Processes"—Neher, Shaw, Bissell

IOWA

IOWA STATE UNIVERSITY
AMES, IOWA 50010

Formal Program Technology and Social Change in Foreign Cultures

Comments Program is guided and directed by an interdisciplinary university committee; formally established in 1972; Committee chairman is Abdel-Aziz Fouad

Courses Offered

"Science and Government"—Ross Talbor
"Water Resources"—Neil Harl
"Contemporary Issues in Agricultural Policy"
"Science and Government"—Ross Talbor
"Water Resources"—Neil Harl
"Physics, History and Society"—R. A. Leacock and H. I. Sharlin
"History of Science"—H. I. Sharlin

Level Graduate and Undergraduate

Research Areas

"Land Use Allocations in U.S."—Earl Heady
"Water Resources Policies"—John Timmons
"Water Resources"—Don Kirkham
"Environmental Impact"—Merwin Dougal
"Technology Assessment"—Aziz Fouad

THE UNIVERSITY OF IOWA
IOWA CITY, IOWA 52240

Formal Program None reported

Courses Offered

Botany Dept.
"Introduction to Botany"—Robert W. Embree
"Phycology"—Robert L. Hulbary
"Systematics"—Thomas E. Melchert
"Seminar: Ecology"—Robert W. Cruden
Speech Fathology Dept.
"Conservation of Hearing"—Julia M. Davis
Core Courses
"Earth History and Resources"—Holmes A. Semken, Jr.
"Chemistry and Physics of the Environment"—Clyde W. Frank and Louis A. Frank
"Chemistry in Our Lives"—Frederick R. Duke
"Philosophies of Man"—Laird C. Addis, Jr.
"Religion in Human Culture"—George W. Forell
Geology Dept.
"Planet in Crisis"—Richard V. Bovbjerg and Keene Swett
European Lit. & Thought Dept.
"Values in the Contemporary World"—William H. Klink and Robert P. Scharlemann
"Science and the Nature of Man"

IOWA—Continued

THE UNIVERSITY OF IOWA—Continued

Courses Offered—Continued

Zoology Dept.

"Population Biology"—Richard V. Bovbjerg and James D. Mohler

"Ecology"—William J. Platt

"Seminar: Systems Ecology"—Hugh Dingle and William J. Platt

"Seminar: Theoretical Ecology"—William J. Platt

Geography Dept.

"Natural Environment and Man"—James S. Gardner and Neil E. Salisbury

"Introduction to Social Geography"—Klyde F. Kohn

"Environmental Issues"—Neil E. Salisbury

"Introduction to Weather and Climate"—Neil E. Salisbury

"Political Ecology"—David R. Reynolds

Engineering School

"Technology and Society"—Bernard L. Meyers

"Flow Systems in Environmental Engineering"—Lane H. Mashaw

"Man and His Environment"—Wayne L. Paulsen

"Environmental Engineering: Microbiology"—Donald B. McDonald

"Environmental Biology"—Donald McDonald

"Environmental Health"—Marcus P. Powell

"Environmental Engineering"—Wayne L. Paulsen, Richard R. Dague, and Lan H. Mashaw

"Solid Wastes Technology"—Richard R. Dague

"Limnology"—Donald B. McDonald

"Seminar: Environmental Engineering"—Wayne L. Paulsen

"Biology of Water Quality Control"—Donald B. McDonald

"Industrial Water Quality Control"—Wayne L. Paulsen

"Environmental Engineering: Chemistry III"—Marcus P. Powell

"Applied Limnology"—Donald B. McDonald

"Environmental Engineering Systems"—Wayne L. Paulsen

"Perspectives on Man and Environmental Issues"

"Biological Control Systems"—Donald M. Levy

"Flow in Open Channels"—John F. Kennedy and William W. Sayre

"Porous Media Hydrodynamics"—John F. Kennedy

"Hydraulic Design"—William W. Sayre

"Flood Control"—Joseph W. Howe

"Mechanics and Sediment"—John F. Kennedy and William W. Sayre

"Coastal Hydronamics"—John F. Kennedy

"Seminar: Water Resources Development"—Joseph W. Howe

IOWA—Continued

THE UNIVERSITY OF IOWA—Continued

Courses Offered—Continued

College of Medicine

"Health Science"—Donald B. McDonald, Keith R. Long and David L. Mick

"Fundamentals of Community Health"

"Principles of Epidemiology"—Paul E. Leaverton, Keith R. Long, and Franklin H. Top

"Environmental Health Science"—Marcus P. Powell

"Industrial Hygiene"—Clyde M. Berry and Robert L. Morris

"Environmental Health Science V"—Robert L. Morris and Marcus P. Powell

"Environmental Toxicology"—Keith R. Long and David L. Mick

General Science Dept.

"Problems in Integrating the Teaching of Environmental Science"—William L. Sharp, Jr.

Anthropology Dept.

"Perspectives on Man and Environmental Issues"—Irl E. Carter

"Human Ecology"—G. Edgar Folk, Jr., James S. Gardner, Marshall B. McKusick and Holmes A. Semken, Jr.

Level—Graduate and Undergraduate

Research Areas

"Reverse Osmosis Membranes"—John K. Stille

"Coralville Reservoir Water Quality Control Study"—Donald B. McDonald

"Urban Transportation Research and Training Project"—Kenneth J. Dueker

"Analysis of Fourth Count Census Data for Twenty Cities to Evaluate Success of Federal Policies"—John Mercer

"Occupational Safety and Health Study—Iowa"—Henri Beenhakker

"Development of an Analytical Model for Sediment Suspension by Waves"—John F. Kennedy

"Development of Reliable Engineering Criteria for the Information and Stability of River Ice Jams"—John F. Kennedy

"Knowledge Utilization Processes in Education"—Lee Thayer

"Prediction of Downstream Temperature Changes from a Given Combination of Effluent Temperature and Discharge, Source Configuration, and Streamflow Conditions"—John F. Kennedy

"Neurobehavioral Study Program"—Clifford L. Mitchell

"Ecological Study of Vaccines"—Peter Isaeson

IOWA—Continued

THE UNIVERSITY OF IOWA—Continued

Research Areas—Continued

"Epidemiological Investigations of Consumer Product-related Injuries"—L. W. Knapp, Jr.

"Iowa Pesticides Study"—Keith R. Long

"Development of a Cytological Tool for Detection of Marker Chromosomes in Genetic Disorders"—Lawrence E. Debault

"Iowa Conservation Commission Stream Pollution Project"—William J. Hausler

"Characterizing of Insect Migration Behaviorally, Physiologically, and Ecologically"—Hugh Dingle

KANSAS

KANSAS STATE UNIVERSITY

MANHATTAN, KANSAS 66502

Formal Program None reported

Courses Offered

Engineering School

"Impact of Engineering Technology on Society"—W. Tripp and R. L. Gorton

"Introduction to Environmental Technology"—N. D. Eckhoff and L. Erickson

"Power, Society and the Environment"—G. R. Marzolf, J. L. Zimmerman and R. L. Gorton

History Dept.

"Science and Government in America"—L. E. Page

"History of American Technology"—L. E. Page

"Seminar in American Science and Technology"—L. E. Page

"Seminar in the History of Science"—B. Eastwood

"History of Science"

"History of Biological Thought"

"The Scientific Revolution"

Level Graduate and Undergraduate

Research Areas "Studies of Minimum Energy Consumption"—R. G. Nevins

"Environmental Control Systems for Buildings"—R. L. Gorton and L. Witmer

UNIVERSITY OF KANSAS

LAWRENCE, KANSAS 66044

Formal Program None reported

Courses Offered

"Engineering and Human Society"—Robert R. Gatts

Level Undergraduate

Research Areas None reported

KENTUCKY

UNIVERSITY OF KENTUCKY
LEXINGTON, KENTUCKY 40506

Formal Program None reported

Courses Offered
College of Engineering
"Water Resources Planning"
"Community Health Aspects of Air Pollution Control"

Level Graduate

Research Areas "Energy Crises and Coal"—O. J. Hahn
"Pollution and Environmental Studies"—Robert Grieves

LOUISIANA

TULANE UNIVERSITY
NEW ORLEANS, LOUISIANA 70118

Formal Program Tulane Program on Science, Technology and Man

Comments An interdisciplinary center manned by faculty volunteers, administered through the office of the Dean of Engineering; formally established in 1970.

Courses Offered
"Technology and Values"—Keller and Webb
"Technology and Humanism"—Buchanan and Hrubecky
"Urban and Global Systems"—Weaver and Drake
"Medical Ethics"—Keller and Webb
"Technology and Politics"—Ebel and Cowin
"Ecology and Environment"—Steimle and Bamforth
"Implications of Biochemical and Medical Research"—Fritchie and Sullivan

Level Undergraduate

Research Areas "Psycho-social Implications of Control"—J. C. Keller and G. R. Webb
"Significance of the Mythic Figure Trickster for Technology Assessment"—J. C. Keller and G. R. Webb

MAINE

No science policy programs, courses or research areas reported.

MARYLAND

JOHNS HOPKINS UNIVERSITY
BALTIMORE, MARYLAND 21205

Formal Program None reported

Courses Offered
"U.S. Ocean Policy"—Ann Hollick
"Global Technology and International Institutions"—Larry Fabian

Level Graduate

Research Areas "U.S. Ocean Policy"—Robert Osgood, Ann Hollick and Charles Pearson

DEPT. OF HEALTH, EDUCATION AND WELFARE
NATIONAL INSTITUTES OF HEALTH
BETHESDA, MARYLAND 20014

Formal Program Grants Associates Program

Comments Formally established in 1962; governed by a board of directors consisting of senior executives of the NIH and HSHMA and is administered by the Division of Research Grants (NIH); offers formal and informal seminars directed to the principal issues of science and public policy specifically of interest to the biomedical research community.

Courses Offered None reported

Research Areas None reported

MASSACHUSETTS

BABSON COLLEGE
BABSON PARK, MASSACHUSETTS 02157

Formal Program Society and Technology

Comments Program constitutes one of the ten major areas of concentration offered to undergraduates; Director is Robert M. McKeon; established in 1972.

Courses Offered
Society and Technology Program
"Technology's Effect upon Human Behavior"—Charles B. Rotman
"Processes of Technological Change"—William L. Casey Jr.
"A History of Technology"—Robert M. McKeon
"Technology and Values"—Robert M. McKeon
"Technological Society"
"Technologies in America's Future"
"Technology in the Public Realm"
"Seminar in Technology and Society"

MASSACHUSETTS—Continued

BABSON COLLEGE—Continued

Level Undergraduate

Research Areas "Science Serves the State: The Life and Career of Navier"—Robert M. McKeon

BOSTON UNIVERSITY
BOSTON, MASSACHUSETTS 02215

Formal Program None reported

Courses Offered

Philosophy Dept.
"Philosophy of Science"—Thomas McCarthy and Joseph Agassi
"History of Science"—Milic Capek
"Philosophies of Nature"—Robert S. Cohen
"Philosophy of Science Seminar"—George Berry
"Philosophical Foundations of Physics"—Marx Wartofsky and Abner Shimony

Geology Dept.
"Environmental Geology"—D. Caldwell
"Seminar in Environmental Geology"—D. Caldwell

Physics Dept.
"Modern Physics and Political Problems"—J. Stachel and L. Kowarski
"Problems in Environmental Analysis"—E. C. Booth, A. H. Hevn

Chemistry Dept.
"Man's Problems and How They Relate to Atoms and Molecules"—W. J. Gensler
"Chemical Science and the World"—R. A. Laursen
"Seminar on Natural Science Components of Public Issues"—R. Levine

History Dept.
"Technology and Organizing Age: 1865–1901"—R. Bruce

Law School
"Human Health and Environmental Decision-Making"—Michael S. Baram and Murray Eden
"Law and Social Control of Science and Technology"—M. S. Baram
"Environmental Management and Planning"—David Rice

Seminar Program
"Science, Technology and Public Affairs"—George J. Nolfi, Jr.

Level Graduate and Undergraduate

Research Areas "Comparative Historical Sociology of Science"—Robert S. Cohen
"Science Rationality and Public Policy"—Marx Wartofsky
"Science and Technology"—Joseph Agassi

MASSACHUSETTS—Continued

BOSTON UNIVERSITY—Continued

Research Areas—Continued
"Physical-Chemical Air Pollution Studies"—E. C. Booth
"General Environmental Studies"—D. Caldwell
"Comparative Historical Sociology of Science"—R. S. Cohen
"Environment and the Law"—D. Rice
"Technology in 19th Century America"—R. Bruce

BRANDEIS UNIVERSITY
WALTHAM, MASSACHUSETTS 02154

Formal Program None reported

Courses Offered
"Environmental Studies"—Thomas C. Hollocher

Level Undergraduate

Research Areas "Technology, Politics and the Aging Process"—Aaron Seidman
"Environments for the Elderly"—Sandra Howell

HARVARD UNIVERSITY
CAMBRIDGE, MASSACHUSETTS 02138

Formal Program Science and Public Policy Program

Comments Interdisciplinary graduate program which offers a M.A. and Ph.D. in Public Policy; analyzes and creates new methods to analyze public policy problems and issues; established in 1970; Director is Don K. Price.

Courses Offered
"Seminar in Science and Public Policy"
"Faculty Research Seminar in Analytic Methods and Public Policy"
"Management of Technological Innovation"—Jordan Baruch
"Technology and Society"—Irene Taviss

Level Graduate and Undergraduate

Research Areas "Technological Innovation"—Jordan Baruch
"Energy"—Robert B. Stobaugh
"Technology Transfer"—Richard S. Rosenblum
"Technology Assessment"

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
CAMBRIDGE, MASSACHUSETTS 02139

Formal Program (1) Science and Public Policy
(2) Center for Policy Alternatives
(3) Ocean Policy

MASSACHUSETTS—Continued

MASSACHUSETTS INSTITUTE OF TECHNOLOGY—Continued

Comments

(1) Science and Public Policy is a teaching and research center on undergraduate and graduate levels in the Political Science Dept. though other disciplines participate; established in 1967; Director is Eugene Skolnikoff.

(2) Center for Policy Alternatives is an interdisciplinary research center based in the School of Engineering, but includes representation from science and social science departments; established in 1972; Director is J. Herbert Hollomon.

(3) Ocean Policy Program was established in 1968, centered in the Ocean Engineering Department but with collaboration with the Political Science Department; Director is Norman J. Padelford.

Courses Offered

Civil Engineering Dept.
- "Special Studies in Systems Engineering"—W. W. Seifert, R. E. Stickney, E. G. Frankel
- "Analysis of Transportation Systems"—W. Pecknold
- "Intro to Water Resources"—J. C. Shaake, Jr., D. C. Major
- "Public Expenditure Theory"—D. C. Major
- "Special Problems in Environmental Law and Regulation"—M. S. Baram
- "Engineering and Public Policy"—W. H. Matthews
- "Law and the Social Control of Science and Technology"—M. S. Baram

Mechanical Engineering Dept.
- "Combustion"—T. Y. Toong

Architecture Dept.
- "Special Problems in Architectural Design: User Needs"—W. A. Southworth
- "Analysis of Urban Design"—W. L. Porter
- "The Industrialized Building Industries"—A. D. Bernhardt

Chemistry Dept.
- "Environmental Measurements Project Laboratory"—J. C. Weaver and C. L. Cooney

Electrical Engineering Dept.
- "Analysis of Urban Service Systems"—R. C. Larson, A. Fleischer, A. R. Odoni

Urban Studies and Planning Dept.
- "Urban Problems in American Society"—W. Doebele
- "American Social Structure and Process"—S.F. Sampson
- "The Urban Transportation Problem"—R. Gakenheimer
- "Technology and the City"—D. Schon
- "Housing Analysis and Public Policy"—A. Solomon

MASSACHUSETTS—Continued

MASSACHUSETTS INSTITUTE OF TECHNOLOGY—Continued

Courses Offered—Continued

"Planning for Community Facilities"—R. Hollister
"Issues and Strategies in Community Development"—F. Jones and M. King
"Urban Economic Analysis"—J. Rothenberg
"Introduction to City Design and Spatial Policy"— G. Hack
"City Design"—K.A. Lynch
"Environmental Programming"—M. O'Hare
"Research Seminar in Environmental Psychology"—M.C. Potter
"Problems in Urban Design"—T. Lee
"Neighborhood Commons: Landscape Architecture in the Service of Community"—K. Linn
"Metropolitan and Regional Planning in Developing Countries"—L. Rodwin
"Urban Settlements, Squatters and Social Change"—J. Turner
"Regional Economic Analysis"—J.R. Harris
"Seminar in National and Regional Planning"—J.R. Harris
"Seminar in Urban Social Policy"—B.J. Frieden
"Planning and Poverty"—L.R. Peattie
"Urban Legal Issues"—M. Karstadt
"Institutional Change in Urban America"—M.Rein, L. Weinreb
"Community and Regional Planning Methods"—P. Herr, S. Carr
"City Planning Techniques"—J.T. Howard
"PPBS and Approaches to Data Management"—K. Colton
"Urban Studies Laboratory"—R. A. Walter
"Laboratory in Models of Urban Growth"—A. Fleisher
"Computer Systems Seminar"—W.M. McMains
"Computer Services"—C. Libby
"Special Studies in US&P: The Impact of Public Policy and Income Redistribution on Social Stratification"
"Psycho-Social Impacts of Technology"—S. Leff

Economics Dept.

"Economic Principles"—R.M. Solow and R.W. Crandall
"Government Regulation of Industry"—R.W. Crandall
"Monetary and Banking Policy"—D.K. Foley
"Distribution of Income and Employment Opportunity"—M. J. Piore
"Monetary Economics"—F. Modigliani
"Fiscal Economics"—E.C. Brown
"Urban Economics"—R.E. Grieson, M.D. Edel
"International Trade"—P. Bardhan
"Regional Economic Analysis"—J. R. Harris
"International Economics"—P. Bardhan
"Labor Relations"—J.E. Annable

MASSACHUSETTS—Continued

MASSACHUSETTS INSTITUTE OF TECHNOLOGY—Continued

Courses Offered—Continued

"Labor Economics and Public Policy"—M.J. Fiore, D.Q. Mills

"Comparative Systems of Industrial Relations and Human Resource Development"—C.A. Myers

"Research Seminar in Industrial Relations"—C.A. Myers

"Problems in Economic History"—P. Temin

"Theory of Economic Development"—J. Bhagvati

Sloan School of Management.

"Seminar on Communication Problems in Science and Technology"—T. Allen

"Seminar on Management Problems in Science and Technology"—D. Marquis and H.J. Hollomon

"International Business Management"—R.D. Robinson

"Management of Human Resources"—M. Haire

"Issues in Large-Scale Systems Design in the Public Sector and Case Studies in Public Operations Management"—P. Kleindorfor and W. Hausman

"Private Industry and Environmental Problems"—G.F. Bloom

"Seminar in the Management of Health Systems"

Aeronautics and Astronautics Dept.

"Legal and Regulatory Aspects of Transportation"—J.P. Vittek

Political Science Dept.

"Politics and Televisions"—E. Diamond

"Evolution of Forces for Limited War"—W.W. Kaufmann

"Development of Limited War Systems and Strategies"—W.W. Kaufmann

"Seminar in Technological Assessment and Public Policy: Selected Topics"—G.W. Rathjens and J.P. Ruina

"Public Management of Science and Technology"—B. Smith

"International Response to Science and Technology"—E.B. Skolnikoff, F. Von Geusau and A. Chayes

"Science, Technology and Government"—H. Sapolsky

"Science, Technology and the State"—E. Skolnikoff

"Technology and Public Policy"—H.M. Sapolsky

"Public Management of Science and Technology"—H. Sapolsky

"Science and American Foreign Policy"—E. Skolnikoff

"Science and Development"—N. Field

"Public Policy and Use of the Seas"—N. Padelford

Nuclear Engineering Dept.

"National Socio-Technological Problems & Responses"—D. J. Rose

Undergraduate Seminars

"The Recycling of Materials"—M. B. Bever and R. W. Crandall

"Films on Solid State Devices and Materials Research"—C. G. Fonstad

"Seminar on Airport Noise"—J. P. Vittek

MASSACHUSETTS—Continued

MASSACHUSETTS INSTITUTE OF TECHNOLOGY—Continued

Courses Offered—Continued
- "Social Consequences on New Communications Technologies"—I. de Sola Pool

Undergraduate Policy Seminars
- "Human Reproduction and the Population Problem"—John B. Stanbury, Anne P. Forbes and Donnella Meadows
- "Urban Transportation: A Bicycle Plan for Cambridge"—Henry Bruck
- "Pot, Acid and Booze"—P. P. Lele
- "Engineering and Public Policy"—William H. Matthews
- "Technology and Society: Technological Futures"—R. W. Wertz
- "Opportunities for Research in Life Sciences for Physicists and Mathematicians"—H. E. Stanley
- "The Economics of Crime"—Ronald E. Grieson
- "Intro to Water Resources"—J. C. Schaake, D. C. Major
- "Community Health: Medication and its Cost to the Consumer of the Inner City"—James T. King
- "Issues in Large Scale Systems Design in the Public Sector"—Paul R. Kleindorfer
- "Audio-Visual Communications"—M. White

Environmental Studies
- "Ecological Principles of Water Pollution Control"—S. F. Moore
- "Earth Surface Processes"
- "Mineral Resources"
- "Cycles in the Oceans and Atmospheres"
- "Environmental Seminar"
- "Economics of Pollution"—Jerome Rothenberg
- "Environmental Management"—W. H. Matthews

Ocean Policy Program
- "Public Policy for the Oceans"—N. J. Padelford
- "Economics and Marine Systems"—J. W. Devanney

Law School
- "Law and the Social Control of Science and Technology"—Michael S. Baram
- "Legal and Social Aspects of Environmental Quality"—Michael S. Baram

Research Areas
- "Technological Change and International Organization"—E. Skolnikoff
- "Defense Support of Research"—H. Sapolsky
- "Science Advisory Mechanisms"—H. Sapolsky, H. Margolis, and A. Cahn
- "Population and Resources"—N. Field
- "Technology Assessment Studies"—G. Rathjens
- "Ocean Commerce and the Future of the Interoceanic Canal"—N. J. Padelford
- "Comparative Technology Policies"—J. H. Hollomon

MASSACHUSETTS—Continued

MASSACHUSETTS INSTITUTE OF TECHNOLOGY—Continued

Research Areas—Continued

"Arms Control"—J. P. Ruina and G. W. Rathjens
"Transfer of Technology"—J. P. Ruina
"Technical Information in the Policy Process"—H. M. Sapolsky
"History of ONR"—H. M. Sapolsky
"R&D Management"—D. G. Marquis
"Communications and Society"—I. Pool
"International Environmental Control"—Michael S. Baram and Samuel P. Mauch
"International Environmental Programs"—Carroll L. Wilson and William H. Matthews
"The Origin and Organization of Large Scale Programs in Technology"—H. Sapolsky
"International Technology Transfer"—T. J. Allen
"Communication Among Scientists and Engineers"—T. J. Allen
"Meeting the Technical Information Needs of R&D Projects"—T. J. Allen
"Diffusion of Innovation in Residential Construction Technology"—Francis T. Ventre

UNIVERSITY OF MASSACHUSETTS
AMHERST, MASSACHUSETTS 01002

Formal Program None reported

Courses Offered

"Science, Technology and Society"—Goss, Louttit, Gunnar and Geifile
"Energy and the Environment"—J. G. McGowan
"Environment and Public Health"—S. R. DiNardi
"Issues in Social Policy Planning"—Gordon Sutton
"Technology and Society"—William Goss
"Science and Medicine in American Society"—Nancy Stepan
"Science and Public Policy"—Pat W. Camerino
"Resource Policy and the Planning Process"—A. J. W. Scheffey

Political Science Dept.

"Political Theory and Public Policy"—Eagan
"Tutorial in Science Policy"—Eagan
"Grad Seminar in Public Policy"—Eagan

Level Graduate and Undergraduate

Research Areas

"Public Policy and Genetic Control"—Eagan
"Political Norms (Authority) Among Scientists"—Eagan
"Technology Assessment of Sea Thermal Gradient Powerplants"—W. P. Goss
"Air Pollution"—James Halitsky

MASSACHUSETTS—Continued

UNIVERSITY OF MASSACHUSETTS—Continued

Research Areas—Continued

"Environmental Management"—Donald D. Adrian
"Housing"—David W. Sears
"Land Use Planning"—Julius G. Fabos
"Nuclear Power"—Joseph Marcus
"Pollution Free Energy"—William Heronemus
"Public Advisory Groups"—Gordon Sutton
"Resource Use Planning"—Edward Kaynor
"State Governmental Agencies"—Arthur Eve
"Technology Utilization"—Howard Segool
"Transportation"— Paul Shuldiner
"Water Resources"—Bernard Berger

NORTHEASTERN UNIVERSITY
BOSTON, MASSACHUSETTS 02115

Formal Program None reported

Courses Offered
"Sociology of Science"—Norman Kaplan
"Science and Public Policy"—George J. Nolfi

Level Graduate

Research Areas "Allocation of Resources for Science"—Norman Kaplan

TUFTS UNIVERSITY
BOSTON, MASSACHUSETTS

Formal Program None reported

Courses Offered
"Science, Technology and Public Policy"—George J. Nolfi

Level Undergraduate

Research Areas None reported

WESTERN NEW ENGLAND COLLEGE
SPRINGFIELD, MASSACHUSETTS 01119

Formal Program None reported

Courses Offered
Engineering School
"Technology in Society"—A. H. Jacobs, Jr.

Level Undergraduate

Research Areas None reported

HARBRIDGE HOUSE
BOSTON, MASSACHUSETTS 02116

Courses Offered
"Maximizing Proprietary Rights"
"Incentive Contracting"

MASSACHUSETTS—Continued

HARBRIDGE HOUSE—Continued

Courses Offered—Continued

"Project Management"
"Administering of Federal Government Projects"
"Contracting for Computer Services"

Professional Staff Charles D. Baker, President; Nicholas P. Flynn, Vice President and General Counsel; Joel B. Searcy, Vice President; Robert D. Crangle and Richard I. Miller.

WOODS HOLE OCEANOGRAPHIC INSTITUTION
WOODS HOLE, MASSACHUSETTS 02543

Formal Program "Marine Policy and Ocean Management"

Comments Program established in 1971; offers post-doctoral fellowships to students and practitioners of the social sciences who are interested in investigating marine related problems within these disciplines; fellowships available to recent Ph.D.'s and J.D.'s; Institute has established liaison with the policy and international affairs centers at Harvard University, relevant departments of M.I.T., and Tufts University.

Courses Offered

"Basic Oceanography"—David A. Ross

Research Areas "Applicability of Fisheries Management on a Large Scale"—John Cordell
"Transfer of Marine Science and Technology to Developing Countries"—Herman Fransen
"Seabed Mineral Resources"—P. Sreenivasa Rao
"Law of the Sea Conference"—P. Sreenivasa Rao
"International Regional Fisheries Agreements"—Peter Hessellund-Jensen

ABT ASSOCIATES
CAMBRIDGE, MASSACHUSETTS 02138

Research Areas "Application of Aerospace Technology to Urban and Housing Problems"—Richard N. Foster
"Delivery of Technology to the Cities"
"Experiments in Technology Transfer for Governments of France and West Germany"

MICHIGAN

MICHIGAN STATE UNIVERSITY
EAST LANSING, MICHIGAN 48823

Formal Program

(1) Science Studies and Senior Seminar, Lyman Briggs College
(2) Science and Mathematics Teaching Center: Environmental Education (College of Education)
(3) University College: Departmental of Natural Science General Education

Comments

(1) The Science Studies and Senior Seminar program was organized in 1967; represents a curriculum area within a non-departmentally organized residential college for undergraduate science students.
(2) The Environmental Education program was organized in 1970; contained within the Center as one department or unit, but moving to college level coordination under a Director.
(3) As a general education department, the courses of the Department of Natural Sciences are concerned with the science-society interaction. The Department was first established in 1944.

Courses Offered

College of Arts and Letters
"Scientific Methodology"
"Philosophy of Mathematics"
"Philosophy of Science"
"Philosophy of Physical Science"
"Philosophy of Biological Sciences"
"Seminar in the Philosophy of Science"

Lyman Briggs College
"Introduction to the Philosophy of Science"
"Historical Problems in the Biological Sciences"—R. Snow
"Historical Problems in the Physical Sciences"—R. Hall
"Historical Problems in Technical Change"—R. Snow
"Philosophy of the Physical Sciences"
"Philosophy of the Biological Sciences"
"Energy Consumption & Environmental Quality"—G. Crawley
"Air Pollution in the Lansing Area"—R. Snow and S. Spees
"Popular Response to Technical Change"—R. Snow and D. Wright

MICHIGAN—Continued

MICHIGAN STATE UNIVERSITY—Continued

Courses Offered—Continued
"Science and Political Ideology"—J. Wagman
"The Environment and Health"—C. San Clemente, et al.
"The Economics of Science"—M. Harrison
"The Exploitation of Scientific Ideas by the Culture"—M. Englemann

University College
"The Nature of Science"
"Science, Man and Society"
"The Dynamics of Scientific Ideas"
"Integrated Studies in Science"
"Science, Beliefs and Values"
"Honors Natural Science"
"Natural Science"
"Studies in Natural Science"

College of Agriculture and Natural Resources
"Public Program Analysis"
"Workshop on Planning and Implementation of Agricultural Development"
"Social Accounts and Community Choice"
"Public Expenditures: Theory and Policy"
"Introduction to Systems Analysis"
"Natural Resources and Modern Society"
"Public Program Budgeting"
"Regional Science Methods"
"Soils and Man's Environment"
"International Studies in Agriculture and Natural Resources"
"Water Resources Law"—L. Leighty
"Location Analysis"—D. Chappele
"Environmental Law"—L. Leighty and D. Bronstein

College of Engineering
"Systems Concepts for Social Scientists"—Manetsch & Park
"Systems Concepts for Biologists"—E. Goodman
"Ecological Systems"—E. Goodman
"Environmental Systems"—R. Rosenberg
"Dynamic Models in Biology"—R. Rosen
"Technology and Society"—D. Montgomery
"Technology Assessment"—D. Montgomery
"Technology and Utilization of Energy'—Dhanak
"Computers in Society"—Hans Lee
"Modern Automobile"—Potter

College of Business
"Organization & Control in the Political Economy: Selected Problems"—R. Solo
"Organization & Control in the Political Economy: Institutions and Theory"—R. Solo

College of Education
"Introduction to Careers in Vocational & Practical Arts: Agriculture"—Johnson & Meaders

MICHIGAN—Continued

MICHIGAN STATE UNIVERSITY—Continued

Courses Offered—Continued

"School & Society: Seminars on Environmental Education"—Hetherington & Nelson

"Special Methods & Materials of Teaching"—Brehm & Smith

"Workshops in Education"—Hetherington

College of Social Science

"Social Knowledge in the Modern World"—J. McKee

Level — Undergraduate and Graduate

Research Areas

College of Engineering	"Environmental Management"—G. A. Coulman
	"Desulfurization of Flue Gas"—B.W. Wilkinson
	"Hemodialysis of Blood Flow"—D.K. Anderson
	"Recycling of Plastics"—R. F. Blanks
	"Design and Management of Environmental Systems"—Herman Koenig and William Cooper
	"Coal Gasification in Power Generation"—Jes Asmussen
	"Development of Control Strategy for Interconnected Power Systems in Times of Critical Load Disturbances"—Robert Schlueter
	"Survey and Analysis of the Technological Considerations as Related to the Development of the Michigan State Plan"—Donald Montgomery
	"Land Disposal of Paper Mill Sludge"—O. B. Andersland
	"Ground Water Flow in Relation to Water Quality"—D. C. Wiggert
	"Effect of Earthquakes on Structures"—Robert Winn
	"Computer Simulation of Traffic Flow"—F. J. Hatfield
	"Environmental Protection Agency"—K. L. Schulze
College of Business	"Science Organization and Technology Transfer in Economic Development"—Robert Solo
	"Price Stability and Technological Advance in a Mixed Economy"—Robert Solo
College of Education	"Outdoor Education"—Miller and Smith
	"Agriculture and Natural Resources"—Donald Meaders
	"Curriculum"—Charles Blackman
	"Field Experiences"—Shirley Brehm

MICHIGAN—Continued

UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN 48104

Formal Program None reported; however, several of the faculty members listed below and students have formed a "New Science Group" which is in the process of establishing a center for study (graduate and undergraduate) and research in the area of science policy. For information contact Prof. Kan Chen, J.C. Mathes, or Bob Williams.

Courses Offered

Anthropology Dept.
"Biology, Society, and Culture"—Livingstone
"Folk, Peasant, and Modernizing Systems"—Miner
Chemistry Dept.
"Chemistry for Non-Scientists"—Dunn
"Chemistry and Society"—Longone
Economics Dept.
"Underdeveloped Economics"—Mueller
Education School
"Industrial Gaming"—Goodman
Engineering School
"Urban Systems"—Kazda
"Macro Social Systems Engineering"—Chen
"Policy Research on Population, Growth and Environment"—Chen, Lagler
"Introduction to Urban Dynamics"—Kazda
"Man's Impact on Environment"—D. H. Gray
Environmental Studies
"Problems of Environmental Quality"—Eschman
Geography Dept.
"Population, Hunger & Economic Development"—Clarkson, Goshing
"World Food Systems"—Nystuen
"Man and the Humid Tropics"—Nietschman
"Cultural and Ecological Systems"—Bishop and Clarkson
Geology Dept.
"Intro to Environmental Geology"—Dorr
History Dept.
"Science to Newton"—Steneck
"Social History of Europe in the 19th Century"—Grew
Humanities Dept.
"Science and Civilization"—Skolimowski
"Philosophy of Technology"—Skolimowski
"Literature and Social Change"—Mathes
"Seminar in Writing and Speaking"—Young
Natural Resources Dept.
"Man and the Environment"—Lagler

MICHIGAN—Continued

UNIVERSITY OF MICHIGAN—Continued

Courses Offered—Continued
"Intro to Land Use Planning"—Schauman
"Remote Sensing of the Environment"—Olson
"Community Environmental Field Studies"—Stapp
"Ecosystems and Resource Management"—Kadlec
"Seminar on Environmental Quality"—Johnson
Philosophy Dept.
"Science and Method"—Stick
"Problems of Space and Time"—Sklar
Physics Dept.
"Quantitative Study of the Environment"—Ross
"Concepts and Methods of Physics"—Hendel
"Energy, Entropy and the Environment"—Ross
Physiology Dept.
"Intro to Human Physiology"—Mouw
Political Science Dept.
"International Security Affairs"
"Resource Planning & Conservation"—Gregg
Psychology Dept.
"Intro to Behavioral Modification"—McConnell
Social Science Dept.
"Global Crises"—Hoover
Sociology Dept.
"The Urbanization of Europe"—Tilly
"Population Problems"—Farley
"Intro to Medical Sociology"—Sharples
"Human Ecology"—Siegel

Level Graduate and Undergraduate

Research Areas "Policy Research on Population & Environment—Chen, Lagler, et al.
"Program in Engineering for Public Systems"—Pollocak, Crecine, et al.

MINNESOTA

CARLETON COLLEGE
NORTHFIELD, MINNESOTA 55057

Formal Program None reported

Courses Offered
Physics Dept.
"Science and Society Colloquium"—Ian G. Barbour and Jerry R. Mohrig
"Nuclear Weapons and the Strategic Arms Race—Barry M. Casper

Level Undergraduate

Research Areas None reported

MINNESOTA—Continued

UNIVERSITY OF MINNESOTA
MINNEAPOLIS, MINNESOTA 55455

Formal Program None reported

Courses Offered

School of Public Affairs
- "Science, Technology and Public Policy"—Victor L. Arnold
- "Natural Environment Policy"—Victor L. Arnold
- "Technology Assessment and Public Policy"—Victor L. Arnold

Social Science Program
- "Society and Technology"—M. Roshwald
- "Ecology, Technology and Society"—E. Anderson
- "Urban Crisis"—G. Glover
- "Societies of the Future"—A. M. Harkins
- "Steady State Earth: Goals and Constraints"—P.L. Blackshear, Jr.
- "Energy Policy"—P.L. Blackshear, Jr.
- "Alternative Futures"—A.M. Harkins

Institute of Technology
- "New Concepts in Urban Transportation"—J.E. Anderson

Level Undergraduate and Graduate

Research Areas
- "New Concepts in Urban Transportation"—J. Edward Anderson with interdisciplinary team
- "Budget Allocation Decision Rules in National Oceanographic Programs"—Victor Arnold and Enid Schoettle
- "Transportation PRT"—Edward Anderson
- "Simulation of Social Institutions"—Robert Holt
- "The Location and Siting of Power Plants"—Dean Abrahamson

MISSISSIPPI

No science policy programs, courses or research areas reported.

MISSOURI

ST. LOUIS UNIVERSITY
ST. LOUIS, MISSOURI 63130

Formal Program None reported

Courses Offered

Political Science Dept.
- "Politics and the Environment"—Steven Puro

Chemistry Dept.
- "Chemistry and Society"—Leo Hohnstedt

MISSOURI—Continued

ST. LOUIS UNIVERSITY—Continued

Courses Offered—Continued
Environmental Studies
"Orientation to Environmental Studies"—Pallmann, Belt, and Dina
"Field Studies in Socio-Environmental Issues"—Bedan, Monahan, Puro and Cepuran

Level Undergraduate

Research Areas None reported

UNIVERSITY OF MISSOURI-COLUMBIA
COLUMBIA, MISSOURI 65201

Formal Program None reported

Courses Offered
"Man and Technology Series—Technology, Communications and the Political Arena"—Interdisciplinary series of courses, coordinated by Frank R. Swenson, Dept. of Mechanical and Aerospace Engineering

Level Undergraduate

Research Areas None reported

WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI 63130

Formal Program (1) Technology and Human Affairs Program
(2) Center for the Biology of Natural Systems

Comments (1) Interschool, interdepartmental master's degree program in Technology and Human Affairs; offers both M.S. and M.A. degree programs; Advisory Committee, consisting of members from the School of Engineering and Applied Science and the Graduate School of Arts and Sciences faculties, sets guidelines and standards for the program; a B.S. with major in Technology and Human Affairs is also offered in the School of Engineering; Director is Robert P. Morgan; established in 1971.
(2) Interdisciplinary, interschool institute for research and training in environmental health sciences and environmental studies; program is a collaborative activity among three major institutions in St. Louis: Washington University (including the School of Medicine), the Missouri Botanical Garden, and the St. Louis Zoo, with faculty of the Center (the Senior Fellows) drawn from Washington University, established in 1966.

Courses Offered
Technology and Human Affairs Program
"Seminar in Technology and Human Affairs"—Hill and staff

MISSOURI—Continued

WASHINGTON UNIVERSITY—Continued

Courses Offered—Continued

"Technology: Values and Responsibilities"—Buchdahl
"Contemporary Technology"—Morgan and staff
"Technology Assessment and Public Policy"—Buchdahl and Hill
"Technology and International Development"—Morgan and Falconer
"Technology, Resources, and Environment"—Morgan and Hill
"Technology, Communications, and Education"—Morgan and Singh
"Satellite Communications Fundamentals"—Singh

Physics Dept.

"Science and Society"—M. W. Friedlander

Level Undergraduate and Graduate

Research Areas

"Application of Communications Satellites to Educational Development"—Morgan
"Development of a Low Cost Roofing Material for Tropical Areas"—Falconer
"Thermal Pollution Due to Electric Generating Stations"—Hill
"Energy Requirements and Environmental Impact of Materials Technology"—Hill
"A Social and Ecological Study of the Urban Dog"—Alan Beck
"Socioeconomic Costs and Benefits of Fertilizer Use in Illinois Corn Belt Agriculture"—Dan Kohl and Barry Commoner
"Investigation of the Impact of NO_2 on a Particularly Susceptible Population"—Dan Kohl
"The Use of Baby Teeth to Study the Accumulation of Lead by Children"—William Lockeretz

MONTANA

MONTANA STATE UNIVERSITY
BOZEMAN, MONTANA 59715

Formal Program None reported

Courses Offered

Engineering College

"Technology and Society"—Lang

Level Undergraduate

Research Areas None reported

NEBRASKA

No science policy programs, courses or research areas reported.

NEVADA

No science policy programs, courses or research areas reported.

NEW HAMPSHIRE

DARTMOUTH COLLEGE
HANOVER, NEW HAMPSHIRE 03755

Formal program Technology and Public Policy

Comments Option in the graduate engineering program Thayer School of Engineering

Courses Offered

Engineering School
"Energy Conversion"—Wallis
"Technological Planning and Resource Allocation"—Ragone
"Systems Dynamics Research Seminar"—Meadows
"Utilization of Mineral Resources"—Quencau
"Process Analysis and Simulation"—Converse
"Industrial Archaeology"—Ernene
"Legal and Ethical Analysis"—Taylor
"Community Services and Planning"

Environmental Studies
"Environmental Policy Formulation"
"Environmental Law"—Brownell
"Technology and Public Health"—Hardy
"Man's Dependence and Effect on his Natural Environment"—Converse and Ragone

Tuck School of Business Administration
"Problems in Managerial Economics"—Bower and Converse
"Technology and Management Seminar"—Quinn
"Topics in Operations Research"—Roodman
"Industrial Simulation"—Meadows
"Principles of Systems Dynamics"—Meadows

Political Science Dept.
"Science and Public Policy"—G. M. Lyons

Sociology Dept.
"Futurism and Long-Range Planning"—H. W. Eldredge

Level Graduate and Undergraduate

Research Areas None reported

KEENE STATE COLLEGE
DIVISION OF UNIVERSITY OF NEW HAMPSHIRE
KEENE, NEW HAMPSHIRE 03431

Formal Program None reported

Courses Offered
"Human Survival"—Thomas M. Stauffer

Level Undergraduate

Research Areas "Creation of a Foreign Policy Area: The Development of an American Position on Population Growth"—Thomas Stauffer

NEW HAMPSHIRE—Continued

UNIVERSITY OF NEW HAMPSHIRE
DURHAM, NEW HAMPSHIRE 03824

Formal Program None reported

Courses Offered

"Technology: Its Role and Function in Society"—Joseph B. Murdoch

Level Undergraduate

Research Areas None reported

NEW JERSEY

PRINCETON UNIVERSITY
PRINCETON, NEW JERSEY 08540

Formal Program None reported

Courses Offered

Political Science Dept.
"Science and Politics"—Gilpin
"Technology, Economics and International Politics—Gilpin
"Technology and International Politics"—Gilpin

Level Graduate and Undergraduate

Research Areas None reported

NEW MEXICO

UNIVERSITY OF NEW MEXICO
ALBUQUERQUE, NEW MEXICO 87106

Formal Program Program for Advanced Study in Public Science Policy and Administration

Comments Interdisciplinary program area established in 1967 with the Master of Arts degree in Public Administration; subjects include Science and Government, Technology and Society, Science and the Humanities, the Economics, Funding and Organization of Science and Technology at Federal, State and Local Levels; courses taken from Political Science, Economics, and Business Administration departments; Director is Albert H. Rosenthal.

Courses Offered

"Seminar in Public Science Policy and Administration"—Albert H. Rosenthal
"Public Administration, Administrative Behavior"—D. Smithburg

NEW MEXICO—Continued

UNIVERSITY OF NEW MEXICO—Continued

Courses Offered—Continued
"Urban Affairs"—E. Conneriey
"Budget Process"—G. Boyle
"Engineering in its Social Context"—M. M. Cottrell

Level Graduate

Research Areas "Public Science Policy and Administration Symposium"—Albert H. Rosenthal

NEW YORK

POLYTECHNIC INSTITUTE OF BROOKLYN
BROOKLYN, NEW YORK 11201

Formal Program None reported

Courses Offered
"Policy Analysis and Planning"—A. George Schillinger

Level Graduate

Research Areas None reported

COLUMBIA UNIVERSITY
NEW YORK, NEW YORK 10025

Formal Program None reported

Courses Offered
"Colloquium on Science, Technology and International Relations"—William T. R. Fox
"Colloquium on Military Technology and International Relations"—Warner R. Schilling
"The Social Control of Technology"—Bruce L. R. Smith

Level Graduate

Research Areas "American Decision to Make the H-bomb"—Warner R. Schilling
"Technological Change and the Balance of Power"—Victor Basiuk

CORNELL UNIVERSITY
ITHACA, NEW YORK 14850

Formal Program Science, Technology and Society

Comments Program was established in 1969 to stimulate interdisciplinary teaching and research on the interaction of science and technology with society; draws students, faculty and research workers from all areas of the University; Program does not offer a curriculum leading to a doctorate, but plans to participate in a new minor field in public policy; Director is Franklin A. Long.

NEW YORK—Continued

CORNELL UNIVERSITY—Continued

Courses Offered

Agricultural Economics Dept.
- "The Economics of Agricultural Geography"—Sisler
- "Agricultural Policy"—Robinson
- "Resource Economics"—Allee
- "United States Policy in the Developing Nations"—Mellor
- "Economic Analysis of Public Investment"—Kalter
- "Food, Population, and Employment"—Poleman
- "Seminar in the Economics of Agricultural Development"—Call, Conklin, Freebairn, Mellor, Poleman, Sisler et al

Agricultural Engineering Dept.
- "Soil and Water Conservation"—Levine
- "Introduction to Environmental Pollution"—Ludington
- "Solid Waste Management"—Loehr
- "Agricultural Waste Management Seminar"

Architecture Dept.
- "Transportation"—Cohen and Meyburg
- "Environmental Control Systems"—Crump
- "Behavioral Science in Design"—
- "Habitability: The Generation of Life Support Systems"—Heerwagen

Astronomy Dept.
- "The World: Universe, Earth, Environment"—Houck, Harwit, Drake and Sagan

Biological Sciences Dept.
- "Biology and Society"—Zahler and Marshall
- "Special Topics in Social Biology"—Zahler and Marshall
- "Introductory Ecology"—Brussard and Marks
- "A Survey of Human Biology"—Stini and Thomas

Botany Dept.
- "Plants and Man"—Bates

Business and Public Administration, Graduate School
- "Introduction to Hospital and Medical Care Organization"—Becker
- "Policy and Planning for Health Care"—Van Ness
- "Health and Welfare Policy: Foundations and Strategies"—Battistella
- "The Political Economy of Medical Care Services"—Kelman
- "Seminar in Comprehensive Health Planning"—Brown, Wan, and Riordan

Chemical Engineering Dept.
- "Industrial Waste Engineering"—Loehr, Behn, and Wiegandt

Chemistry Dept.
- "Man in his Chemical Environment"—Sienko

Civil Engineering Dept.
- "Water Resources Policies and Problems"—Dworsky et al.

NEW YORK—Continued

CORNELL UNIVERSITY—Continued

Courses Offered—Continued

"Environmental Quality"—Gates
"Air Quality Control"—Gates
"Water Resources Seminar"—Dworsky et al.
"Transportation Engineering"—Fisher
"Urban Transportation Planning"—Meyburg and Stopher
"Airport Planning and Operations"—Meyburg
"Design and Planning of Mass Transportation"—Stopher

Computer Science Dept.

"The Computerized Society"—Horowitz (Mr. and Mrs.)

Consumer Economics and Public Policy Dept.

"Man in Contemporary Society"—Clemhout
"The Social and Economic Effects of the Housing Environment"—Morris and Winter
"Welfare Economics"—Clemhout
"Public and Private Decision Making"—Babb
"Applied Welfare Economics—Policy Issues"—Clemhout

Design and Environmental Analysis Dept.

"Environmental Analysis: Human and Social Factors"—Coates
"Science for Consumers"—Purchase
"The Child-Oriented Environment"—Coates
"Household Equipment Principles"—Purchase
"Environmental Analysis: Person, Activity, Space"
"Residential Environments: The Behavioral Basis for Design Decisions"—Coates
"Psychology of the Near Environment"—Ostrander
"Man-Activity-Environment Relationships"—Steidl
"Social Psychology of the Near Environment"—Ostrander

Economics Dept.

"The Impact and Control of Technological Change"—Mueller and Nelkin
"Economics of Market Failure"—Hohenberg
"Industrial Organization"—Blackstone
"Public Regulation of Business"—Blackstone
"Economics of Regulation"—Kahn
"Industrial Organization and Regulation"—Blackstone

Engineering School

"Social Implications of Technology"
"The Law and Environmental Control"—Bereano
"Seminar in Technology Assessment"—Bereano et al.

Food Science Dept.

"Food Facts and Fads"—Shipe

Government Dept.

"Urban Politics"—Van Houweling
"Impact of Technology on Defense and Disarmament Policies"—Long and Sharfman
"Transfers of Science and Technology from Industrialized to Developing Countries"—Esman et al.
"Science, Technology and Public Policy"—Richard Rettig

NEW YORK—Continued

CORNELL UNIVERSITY—Continued

Courses Offered—Continued

"Science, Technology, and International Relations"—Esman et al.

"The City and Cybernetics"—Van Houweling

"Research Seminar in American Urban Politics"—Van Houweling

History Dept.

"Science in Western Civilization"—Williams, Provine

"Problems in the History of Biology"—Provine

"Seminar in the History of Science During the 19th and 20th Centuries"—Williams

Human Nutrition and Food Dept.

"Ecology of Human Nutrition and Food"—Devine

International Studies Dept.

"Peasants, Power, and Productivity: Rural Development in the Third World"—Uphoff, Greenwood and Levine

"World Population: People, Power and Development"—Segal, Colle et al.

Law School

"Science, Technology and Law"—Hanslowe

"Land-Use Planning"—Roberts

"Computers and the Law"—Pasley

"The Nature, Functions, and Limits of Law"—Summers

Mathematics Dept.

"History of Mathematics"—Platek

Mechanical Engineering Dept.

"Technology and Society—An Historical Perspective"—Conta

Natural Resources Dept.

"Ecological Basis for Conservation"—McNeil

"Environmental Conservation"—McNeil

"Environmental Aspects of Water Resources Management"—Oglesby

"Perspectives on Conservation"—Wilkins

"Seminar in Natural Resources Planning and Development"—Hamilton

"Wildlife Science Seminar"

"Seminar on Selected Topics in Natural Resources Conservation"—Brumsted

Nutrition, Graduate School

"International Nutrition Problems, Policy, and Programs"—Latham

"Food Economics"—Call

Policy Planning and Regional Analysis Dept.

"Introduction to Urban and Regional Theory"—Goldsmith and Smith

"Theories and Strategies of Social Change"—Hersley

"Introduction to Computers in Planning"—Saltzman

"Planning and Management Information Systems"—Saltzman

"Introduction to Social Policy"—Hersley

NEW YORK—Continued

CORNELL UNIVERSITY—Continued

Courses Offered—Continued

"Seminar in Urban and Regional Information Systems"—Saltzman

"Regional Planning and Development in Developing Countries"—Goldsmith

"Seminar in Social Policy Research and Analysis"—Hershey

"Planning Techniques for Developing Regions and Small Nations"—Goldsmith

Sociology Dept.

"Population Problems"—Stycos

"Intergroup Relations: Social Conflict and Cooperation"—Williams

"Urban Communities"—Reissman

"Sociology of Human Fertility"—Stycos

"Human Migration"—Chi

"Structure and Functioning of American Society"—Williams

"Philosophy of Social Research"—McGinnis

"Introduction to Social Demography"—Chi

"Social Epidemiology"—Wan

"Seminar: Sociology of Adulthood and Aging"—Streib

"Seminar: Urbanization"—Reissman

"Sociology of Science and Technology"—Gordon

Statistics and Biometry Dept.

"Statistics and the World We Live In"—Cady

Urban Planning and Development Dept.

"Introduction to Concepts and Principles of Urban Planing and Development"—Reps and Stewart

"Controls and the Planner and Architect"—Kelly

"Legal Aspects of Planning"—Reps

"Introduction to Environmental Planning and Design"—Richardson

"Seminar in Urban Land Use and Industrial Location"—Czamanski

"Urban Land Policy and Programs"—Reps

"Metropolitan Growth, Open Space, and New Communities"—Reps and Stewart

"Seminar in Urban Design"—Witzling

"Urban Politics and Planning"—Stewart

"Housing and the Community"—Kelly

Level — Graduate and Undergraduate

Research Areas

"The University and Military Research: Moral Politics at MIT"—Dorothy Nelkin

"A Problem Assessment of the Video Telephone"—Edward Dickson and Raymond Bowers

"The Lake Champlain Sludge Controversy: The Development of an Interstate Dispute"—Marie Provine

NEW YORK—Continued

CORNELL UNIVERSITY—Continued

Research Areas—Continued
"Sea-based Strategic Missile Systems"—F.A. Long, Michael Rosenthal
"Technology Assessment"—Raymond Bowers
"War and Peace—The Atom Bomb"—Marty Sherwin
"Technology and the Law"—Joe Feldman
"Ecology"—Daniel Goodman
"Methodology for Technology Assessment"—Philip Bereano
"Anti-Submarine Warfare"—Michael Rosenthal
"Death and Dying"—Robert Morison
"Studies of Graduate Education in Science"—G. Gordon, R. McGinnis, R. Morison, R. Bowers, and D. Cooke
"Development of an Interdisciplinary Urban Simulation Game"—Douglas Van Houweling

HOFSTRA UNIVERSITY
HEMPSTEAD, NEW YORK 11550

Formal Program None reported

Courses Offered
Engineering School
"Technology and Society—Impact and Implication"—Lee Rosenthal

Level Undergraduate

Research Areas None reported

CITY UNIVERSITY OF NEW YORK
NEW YORK, NEW YORK 10031

Formal Program None reported

Courses Offered
City College of New York
History Dept.
"Science, Technology and Human Culture"—Walter Rand
"History and Philosophy of Science and Engineering"—Walter Rand
Engineering School
"How to be a Survivor"—A. Bierman, G. Paulson
"Science and Society"—P. Ruskin
Baruch College
"Sociology of Science"—N. W. Storer

Level Undergraduate and Graduate

Research Areas "Diversity: Natural and Social"—Walter Rand
"Science, Technology and Human Culture—Reference and Coordinate Systems"—Walter Rand

NEW YORK—Continued

STATE UNIVERSITY OF NEW YORK
ALBANY, NEW YORK 12203

Formal Program Science and Technology Studies

Comments Formerly within the Dept. of History and Systematics of Science; established in 1970 as a separate program under the direction of Jack J. Bulloff.

Courses Offered
"Science, Technology and Society"—J. J. Bulloff
"Science and Technology Forecasting"—J. J. Bulloff
"Science and Technology Policy"—J. J. Bulloff
"Science and Technology Assessment"—J. J. Bulloff
"Research and Development Planning"—J. J. Bulloff
"Environmental Quality Control"—J. J. Bulloff
"Evolution of Terrestrial Environments"—J. J. Bulloff
"Metahistory of Science and Technology"—J. J. Bulloff
"Scientific and Technological Writing"—J. J. Bulloff
"Politics and Technology"—Walter Goldstein

Level Graduate

Research Areas
"Surprise-Free Science and Technology Forecasting"—J. J. Bulloff
"Forecast of Doctoral Degree Production, 1973–2025 A.D."—J. J. Bulloff
"Electronic-Nuclear Change of Atomic-Molecular Ideas"—J. J. Bulloff
"Metahistory of Science and Technology"—J. J. Bulloff

STATE UNIVERSITY OF NEW YORK
BINGHAMTON, NEW YORK 13901

Formal Program Center for Integrative Studies

Comments Located within the School of Advanced Technology; concerned primarily with studies in the long-range social and cultural implications of scientific and technological developments; provides a focus for graduate education and research; Director is John McHale.

Courses Offered None reported

Research Areas
"Relationships Between Population and Resources for the Next Fifty Years"—John McHale
"The Changing Information Environment: A Selective Topography"—John McHale
"The Changing Context for Management"—John McHale

NEW YORK—Continued

STATE UNIVERSITY OF NEW YORK
PLATTSBURGH, NEW YORK 12903

Formal Program None reported

Courses Offered

"Science and Society"—Worrall

Level Undergraduate

Research Areas None reported

STATE UNIVERSITY OF NEW YORK
STONY BROOK, NEW YORK 11790

Formal Program Program for Urban and Policy Sciences

Comments Separate campus unit offering three educational program options (urban science, urban management and planning) in a M.S. program; carries on an interdisciplinary research program; has its own faculty and uses inter-departmental personnel; established in 1970.

Courses Offered

"Analysis of Public Service Systems"—Bodin, Beltrami
"Statistics, Data Analysis, Econometrics"—Altman
"Price and Welfare Theory"—Sattinger
"Macroeconomics and Public Sector Finance"—Sattinger
"Political and Administrative Decision Making"—Young
"Case Studies in Public Policy Issues"—Altman
"Planning and Policy Sciences Seminar"—Ehler
"Research Project in System Planning and Management"—Ehler

Level Graduate

Research Areas

"Urban Waste Management"—Beltrami
"Criminal Court Systems"—O. Carroll
"Financing of Public Services"
"Productivity of Municipal Service Employees"—Altman

NEW YORK UNIVERSITY
NEW YORK, NEW YORK 10003

Formal Program None reported

Courses Offered

Biology Dept.

"Introduction to Ecology"—Palmer
"Population and Community Ecology Laboratory"—Palmer
"Statistical Methods for Environmental Health"—Pasternack
"Environmental Contamination"—Lippmann
"Environmental Toxicology"—Palmes
"Ecology of Populations"—Brockelman

Chemistry Dept.

"Chemistry and Culture"—S. C. Dickerman

NEW YORK—Continued

NEW YORK UNIVERSITY—Continued

Courses Offered—Continued

Economics Dept.
"Urban Economic Structure"—Kamin sky

Mathematics Dept.
"Science and Politics"—Evelyn Keller

Philosophy Dept.
"Philosophy of Science"—Ruddick

Politics Dept.
"Urban Government and Politics"
"Political Control of Environmental Problems"—Louis Friedman
"Pollution, Urban Problems, and Technology"—W. G. Hoydysh

Psychology Dept.
"Schizophrenia"—T. J. Matthews

Graduate School of Business Administration
"Management of Science and Technology"—Benjamin Barg
"Future Dimensions in the Management of Enterprises and Organizations"—Benjamin Barg

Level Graduate and Undergraduate

Research Areas None reported

ROCKEFELLER UNIVERSITY
NEW YORK, NEW YORK 10021

Formal Program None reported

Courses Offered
"Science and the Evolution of Public Policy"—Shannon

Level Undergraduate

Research Areas None reported

SYRACUSE UNIVERSITY
SYRACUSE, NEW YORK 13210

Formal Program—Program in Technology and Society

Comments Program is focused initially on teaching; future research is planned; Committee, drawn from the Maxwell School of Public Affairs and School of Engineering, is supervising courses for the program; established in 1972; Chairman of the Committee is Norman Balabanian.

Courses Offered
"Nature of Technological Society"—A. H. Teich and N. Balabanian
"Social Aspects of Science and Technology"—E. Drucker and A. Mazur
"Science and Public Policy"—W. H. Lambright and P. Rice
"Technology and the Environment"—T. Wilbanks
"Environmental Sanitation"—D. Jackson
"Fuels and Energy Utilization"—E. Drucker

NEW YORK—Continued

SYRACUSE UNIVERSITY—Continued

Courses Offered—Continued
"Biology and Human Values"—H. R. Levy and T. Foudy
"Technological Issues"—Balabanian and Teich
"Seminar on Technological Problems"—Staff

Level Graduate and Undergraduate

Research Areas "NASA Project Management Studies"—Martin Barzeley
"Dial-A-Bus: An Innovation in the Making"—Lambright
"Weather Modification Policy"—Lambright
"Diversification of National Laboratories"—Teich

AMERICAN INSTITUTE OF PHYSICS
NEW YORK, NEW YORK 10017

Formal Program Center for History of Physics

Comments Formally established in 1965 as a division of the Institute; locates, catalogues, and arranges for the preservation of historical materials; provides research on the history and sociology of 20th century physics and its relation to society.

Research Areas "Historical Development of Nuclear Physics"—Charles Weiner

INSTITUTE ON MAN AND SCIENCE
RENSSELAERVILLE, NEW YORK 12147

Formal Program Institute on Man and Science

Comments Institute is chartered by the Board of Regents of S.U.N.Y.; utilizes small permanent staff and task teams of consultants and a special network of program advisors for guidance on each project; purpose of the Institute is to help men to relate technological, social and economic changes to values and ends of human existence; offers an academic center for study and conference projects; President is Everett R. Clinchy.

INSTITUTE OF SOCIETY, ETHICS AND THE LIFE SCIENCES
HASTINGS-ON-HUDSON, NEW YORK 10706

Formal Program Institute of Society, Ethics and the Life Sciences

Comments Entire Institute is devoted to public policy questions which arise in the life sciences; formally established in 1970 as an interdisciplinary Institute and incorporated as a non-profit, tax exempt research and education organization; future plans include establishing a visiting research fel-

NEW YORK—Continued

INSTITUTE OF SOCIETY, ETHICS AND THE LIFE SCIENCES—Continued

Comments—Continued
lowship program and additional research support; Director is Daniel Callahan.

Courses Offered
Columbia Medical School
"Program in Medical Ethics"—Gaylin and Veatch
"Program in Law and the Life Sciences"—Gaylin, Edgar and Lappe
S.U.N.Y. Purchase
"Philosophy, Science and Public Policy"—Neville et al.
Scarsdale Adult School
"The Biological Revolution"—Veatch
Dartmouth College
"Control of Life"—Veatch et al.
St. Vincent's Hospital
"Nursing Ethics"—Veatch et al.
"Medical Ethics Workshop for College Faculty"—Veatch, Callahan et al.

Research Areas "Genetic Counseling and Engineering"—Lappe et al.
"Behavioral Control"—Neville et al.
"Death and Dying"—Kass, Morison et al.
"Population Ethics"—Callahan, Veatch et al.

NORTH CAROLINA

NORTH CAROLINA STATE UNIVERSITY
RALEIGH, NORTH CAROLINA 27607

Formal Program None reported

Courses Offered
Engineering Dept.
"Technology and Human Values"—Patrick H. McDonald

Level Undergraduate

Research Areas None reported

NORTH DAKOTA

UNIVERSITY OF NORTH DAKOTA
GRAND FORKS, NORTH DAKOTA 58201

Formal Program None reported

Courses Offered
"Seminar in the Sociology of Science"—Aqueil Ahmad
History Dept.
"Modern Science"—Gerald Lawrence
Arts and Sciences
"History of Technology"—Alan Fletcher

Level Graduate and Undergraduate

Research Areas
"Lignite Research"—D. S. Severson
"Biomedical Research"—F. O'Brien

OHIO

CASE WESTERN RESERVE UNIVERSITY
CLEVELAND, OHIO 44106

Formal Program (1) Science, Technology and Public Policy (STPP)
(2) History of Science and Technology (HSST)

Comments Both programs offer graduate degrees administered by a non-disciplinary unit; course work and thesis preparation may take place under the guidance of various faculty and units; established in 1965; Director is T. Dixon Long.

Courses Offered

Science, Technology and Public Policy Program
"Social Research and Public Policy"—Davis
"Science and Government"—Nichols
"Science, Technology and International Relations"—Long
"Science Fiction and Social Policy"—Livingston
"Seminar in Science and Public Policy"—Glasson
"Scientists in Politics"—Nichols
"Science and the International System"—Long
"International Regionalism"—Long

History of Science and Technology Program
"History of Science"—Schofield
"Science in America"—Layton
"History of Technology"—Kranzberg
"History of the Medical and Related Sciences"—Miller
"The Industrial Revolution"—Schofield
"History of Industrial Society"—Jenkins
"The Atomic Age and the Federal Government"—Layton
"History of Modern Biology"—Williams
"The Scientific Revolution"—Schofield
"Development of Industrial Society"—Jenkins
"Seminar in Science and the Federal Government"—Layton
"Introduction to Social Sciences: National Policy Problems"
"Introduction to Humanities: Man and Nature"

Level Graduate and Undergraduate

Research Areas "History of the Behavioral Sciences"—Robert C. Davis
"Role of Scientists in International Affairs"—T. Dixon Long
"Regional Approach to Phosphorous Pollution Control"—M. Mesarovic, S. Epstein, R. Nelson
"The Predicament of Mankind: Phase II"—M. Mesarovic

OHIO—Continued

UNIVERSITY OF CINCINNATI
CINCINNATI, OHIO 45221

Formal Program None reported

Courses Offered
"Science and Public Policy"—Robert P. Koontz

Level Undergraduate

Research Areas "Off Shore Oil Drilling"—Guy Taft

UNIVERSITY OF DAYTON
DAYTON, OHIO 45406

Formal Program None reported

Courses Offered
"Introduction to Environmental Studies"
"Environmental Legislation"
"World Energy Supply and Usage"
Political Science Dept.
"Science and Public Policy"—Lyndon Abbott
Geology Dept.
"Environmental Geology"—J. Murtaugh

Level Graduate and Undergraduate

Research Areas Anticipate more extensive research in the science policy area, particularly related to (a) State-local governments and (b) policy analysis.

KENT STATE UNIVERSITY
KENT, OHIO 44242

Formal Program None reported

Courses Offered
"Aerospace Transportation"
"Technology and Management"—Schnitter
"Business in the 21st Century"—Mulvihill

Level Undergraduate

Research Areas Personal scientific research—Wilbur M. Franklin

OHIO STATE UNIVERSITY
COLUMBUS, OHIO 43210

Formal Program None reported

Courses Offered
Public Administration Division
"Seminar on Public Policy Formulation"
"Seminar on Systems Analysis for Public Policy Decisions"
"Seminar in Science Policy"—James Carroll and Richard Rettig
"Information Systems Administration"

Level Graduate

Research Areas None reported

OHIO—Continued

OHIO UNIVERSITY
ATHENS, OHIO 45701

Formal Program None reported

Courses Offered
- "Human Population Growth—Good or Bad?"—William D. Russell
- "Energy and Man"—Pete Lawrence
- "Engineering and Technological Society"—Charles Overby
- "Technology and the Environment"—Paul Anton
- "Technology and Society"—Charles Overby
- "Engineering and Technology"—Bruce Groot
- "Intro to Materials"—Cal Bolsom
- "Environmental Separating Processes"—Nick Dinos
- "Utopian Literature"—E. Quattrocki
- "History of Western Technology"—H.B. Kendall

Level Undergraduate

Research Areas
- "Removal of SO_2 from Gas Mixtures"—L. Holtzmeier
- "Low Pollution Engineer Research"—W. Beale

YOUNGSTOWN STATE UNIVERSITY
YOUNGSTOWN, OHIO 44512

Formal Program Man and the Technological Society

Comments Interdisciplinary teaching program interweaving Chemical Engineering, Sociology and Biology Departments; established in 1971.

Courses Offered
- "Man and the Technological Society"—Henry P. Stoop, Guido A. Dobbert, and Lauren A. Schroeder

Level Undergraduate

Research Areas None reported

BATTELLE MEMORIAL INSTITUTE
COLUMBUS, OHIO 43201

Formal Program None reported

Courses Offered
- "Science Policy Colloquium Series"—coordinated by Eugene M. Simons and Gabor Strasser

Level Battelle staff and interested parties

Research Areas
- "The Interaction of Science and Technology in the Innovative Process"
- Many other research projects in the following areas:
  - New Products and Processes
  - Productivity Improvements in the Manufacturing and Service Sectors
  - Energy Generation and Delivery

OHIO—Continued

BATTELLE MEMORIAL INSTITUTE—Continued

Research Areas—Continued
Environmental Protection
Health Care
Transportation
Housing
Resource Utilization

OKLAHOMA

OKLAHOMA STATE UNIVERSITY
STILLWATER, OKLAHOMA 74074

Formal Program None reported

Courses Offered
Engineering School
"Man in a Technological Society"—Tom and Jan Dean

Level Graduate

Research Areas None reported

UNIVERSITY OF OKLAHOMA
NORMAN, OKLAHOMA 73069

Formal Program Science and Public Policy Program

Comments Interdisciplinary Research Teaching Center; established in 1970.

Courses Offered
"Science, Technology and International Politics"—Irvin L. White
"Science, Technology and Public Policy"—Don E. Kash
"Technology and Society"—L. W. Zelby
"Energy and Environment"—S. N. Salomon

Level Undergraduate and Graduate

Research Areas "Technology Assessment of Off-Shore Oil Operation"—Don E. Kash and Irvin L. White
"Governor's Conference on R&D Priorities for Oklahoma"—George W. Reid

OREGON

UNIVERSITY OF OREGON
EUGENE, OREGON 97403

Formal Program None reported

Courses Offered
Physics Dept.
"Science Development"—Moravcsik
"Physics, Society and Culture"—F. E. Dart

Level Graduate and Undergraduate

Research Areas "Cross Cultural Teaching of Science"—F. E. Dart
"Science Development in the Less Developed Countries"—Moravcsik

OREGON—Continued

PORTLAND STATE UNIVERSITY
PORTLAND, OREGON 97207

Formal Program None reported

Courses Offered
"Government, Technology and Society"—David A. Smeltzer

Level Graduate

Research Areas None reported

PENNSYLVANIA

CARNEGIE-MELLON UNIVERSITY
PITTSBURGH, PENNSYLVANIA 15213

Formal Program
(1) Program in Engineering and Public Affairs
(2) Environmental Studies Institute

Comments
(1) Program is a joint undertaking by the engineering school (Carnegie Institute of Technology) and the urban management school (School of Urban and Public Affairs); primary responsibility is development and administration of an undergraduate curriculum open to engineering students; established in 1971.
(2) The Environmental Studies Institute is jointly administered by the College of Engineering and the School of Urban and Public Affairs; staff of the Institute has joint appointments with these two Colleges and with the Graduate School of Industrial Administration, the School of Humanities and the School of Science; Institute offers no degrees, but serves as a focal point for research; established in 1971.

Courses Offered
"Physical-Technical Systems"—S. William Gouse, Jr.
"Emerging Problems in Technology"—W. L. Cox
"Fuel and Energy Utilization"—S. W. Angrist
"Fuels Processing: Technology and Public Policy"—M. J. Massey
"Impact of Materials on Society"—I. M. Bernstein
"Problems and Prospects of Environmental Quality"—M. J. Reilly
"Environmental Engineering"—F. C. McMichael
"Air Pollution"—E. S. Rubin
"Products Liability"—H. R. Piehler and A. S. Weinstein
"Hazardous Product Analysis: Technology and Regulation"—R. D. Pittle
"Urban Engineering"—J. P. Romualdi

PENNSYLVANIA—Continued

CARNEGIE-MELLON UNIVERSITY—Continued

Courses Offered—Continued

"Transportation Engineering"—J. Tolle
"Urban Models"—J. Belkin and F. W. Paul
"Systems Synthesis"—A. Blumstein, L. Lave and S. Angrist
"Criminal Justice Systems"—R. Shellow, D. Craig and A. Blumstein
"Science and Society"—L. Wolfenstein
"Engineering and Public Affairs"—R. W. Dunlap and G. H. Lewis

History Dept.

"Science and Technology in America"—H. Burstyn
"The Scientific Outlook"—H. Burstyn
"Science and the Modern World"—H. Burstyn

Level—Graduate and Undergraduate

Research Areas

"The Challenger Expedition (1872–76) and its *Report* (1880–95)"—H. Burstyn
"History of American Science, 1830–1860"—H. Burstyn
"History of Mellon Institute"—T. Fox and H. Burstyn
"Household Energetics"—Stanley Angrist
"Pollution Control"—M. Reilly, R. Dunlap *et al.*
"Evaluation of Air Pollution Control Strategies for Allegheny County, Pa."—R. W. Dunlap, W. L. Gorr and E. S. Rubin
"The Air Pollution Episode Game"—M. J. Reilly, A. S. Walters, Jr.
"Impact of Widespread Adoption of the Solvent Refined Coal Process"—S. W. Gouse, S. W. Angrist, F. C. McMichael, M. J. Reilly, E. S. Rubin et al
"Aerosol Removal by Natural Precipitation"—F. C. McMichael
"Control of Sulfur Emissions during the Cooling of Blast-Furnace Slag"—R. W. Dunlap, M. J. Massey
"Control of Atmospheric Emissions from Acheson-Type Furnaces"—E. S. Rubin
"Development of a Criminal Justice Plan for Allegheny County"—A. Blumstein
"The Contribution of a College Education Towards Reducing Recidivism-Evaluation"—A. Blumstein
"Interactive Feedback Planning Model of a Criminal Justice System"—A. Blumstein
"Development and Application of a Computer-Assisted Urban Game to the Education of Managers for the Public Sector"—J. Belkin

PENNSYLVANIA—Continued

CARNEGIE-MELLON UNIVERSITY—Continued

Research Areas—Continued

"Development of Optimal Strategies for Air Pollution Control in Various Air Sheds"—K. Kortanek and A. Walters

Various topics in fuels research and environmental pollution—S. W. Angrist

"Combined Impact of All Government Regulation on Ground Transportation Industry"—S. William Gouse, Jr. et al.

"Optimal Control Strategies for Air Quality Standards and Regulatory Policy"—K. O. Kortanek and W. L. Gorr

"Low Level Radiation and Mortality"—L. B. Lave and S. Leinhardt

"Transporting North Slope Oil"—R. A. Rice and D. M. Baumann

"Impact of Large Scale Implementation of Clean Fuels from Coal Processes"—S. William Gouse, Jr.

"Improving Consumer Safety through Innovative Consumer Education"—R. D. Pittle

"Product Liability: A Study of the Interaction between Law and Technology"—H. R. Piehler and A. S. Weinstein

DREXEL UNIVERSITY
PHILADELPHIA, PENNSYLVANIA 19104

Formal Programs

(1) Center for Urban Research and Environmental Studies

(2) Environmental Engineering and Science Program

Comments

(1) Established in 1969 for interdisciplinary research and study; offers no special courses or students.

(2) Established in 1963 for interdisciplinary teaching and research; includes faculty from all departments of the university; awards graduate degrees.

Courses Offered

Environmental Engineering Dept.

"Ecology"—E. Glazer

"Environmental Health"—P. W. Purdom

"American Political System"—E. Arian

"Transportation Engineering"—T. Harvey

"Solid Waste Systems"—R. Schneiberger

"Stream Analysis and Pollution Control"—E. Glazer

"Air Resource Management"

Mechanical Engineering Dept.

"Energy and the Environment"—B. Hertz

PENNSYLVANIA—Continued

DREXEL UNIVERSITY—Continued

Courses Offered—Continued

"Transportation and the Urban Environment"—T. Harvey
"Technology and Public Policy"—R. Rosen
"Energy Systems"—H. Brown, H. Kwatny, B. Hamel
"Social Responsibility of the Engineer and Scientist"—George Dieter

Dept. of Social Sciences
"Science and Public Policy"—M. J. Sullivan
"Technology and the World Community"—M. J. Sullivan
"Social Implications of 20th Century Technology"—A. Shostak
"Technology and Society"—A. B. Shostak
"History of Technology"—C. O. Smith
"History of Science"—Richard Rosen

Level: Undergraduate and Graduate

Research Areas:
"Solid Waste Incineration"—R. Schoenberger
"Diesel Odor Abatement"—R. Matula
"Estuary Ecology"—E. Glazer
"Ecology of Landfill"—A. Fungaroli
"Air Pollution System Analysis"—R. Thibodeau
"Urban Transportation Systems Analysis"—T. Harvey and C. W. Savery
"Dry Cooling Towers to Reduce Thermal Pollution"—C. W. Savery
"Optimal Control of Interconnected Power Generators—H. Kwatny
"Arms Control and Disarmament Policies"—M. J. Sullivan
"The Role of the Engineer in France in the 19th Century"—C. O. Smith

PENNSYLVANIA STATE UNIVERSITY
UNIVERSITY PARK, PENNSYLVANIA 16802

Formal Program: (1) Center for the Study of Science Policy
(2) Science, Technology and Society

Comments:
(1) The Center is a research unit, established in 1969, located administratively in the Institute for Research on Human Resources; Center's staff all have regular academic appointments; research is performed on a grant and contract basis with Federal and State agencies; interdisciplinary focus.
(2) The Science, Technology and Society Program is an interdisciplinary graduate and advanced undergraduate non-degree

PENNSYLVANIA—Continued

PENNSYLVANIA STATE UNIVERSITY—Continued

Comments—Continued

set of courses administered by an all-University Committee; a structure for an interdisciplinary Research Center is under consideration; Program will be established in 1972 pending final University Senate approval of courses.

Courses Offered

Economics Dept.
"Economics of Technology"—Irwin Feller
Science, Technology, and Society Program
"Technology, its Character Role and Function"—Heinsohn
"The Impact of Science on Religion and Philosophy"—Schilling
"Technological Change: Its Production, Diffusion and Impact"—Feller
"Science and Public Policy"—Roy
"Technology Assessment & Indicators of the Quality of Life"—Vallance
"Technology and Human Values"—Goldberg
This listing does not include literally dozens of courses in areas such as the Environment, Biology and Society, etc.

Level Graduate and Undergraduate

Research Areas
"Intergovernmental Relations in Determination of Air Pollution Research"—I. Feller, A. Engel and R. Friedman
"Pilot Science and Society Presentation at National Assemblies"—R. Roy
"State Planning of Economic Growth Through Support of R&D"—I. Feller
"Assessing the Public's Understanding of Science"—R. Funkhouser and R. Roy
"Conference on Research Priorities for the Commonwealth of Pennsylvania"—I. Feller
"Development of Science Advisory Mechanisms for State Legislatures"—I. Feller, A. Engel, and R. Friedman
"R&D and Regional Growth"—I. Feller, W. Long and J. Nelson

UNIVERSITY OF PENNSYLVANIA
PHILADELPHIA, PENNSYLVANIA 19104

Formal Program None reported

Courses Offered

Wharton School
"The Economics of Technological Change"—Mansfield
"Seminar in Technological Change"—Mansfield

PENNSYLVANIA—Continued

UNIVERSITY OF PENNSYLVANIA—Continued

Courses Offered—Continued

Dept. of History and Sociology of Science

"History and Sociology of Science"—Arnold Thackray, Mark Adam, and Charles Culotta

Level — Graduate and Undergraduate

Research Areas — "Study of the Interrelations of Science, Technology and Society in the United Kingdom at the time of the Industrial Revolution"—Arnold Thackray

"Econometric Studies of Research and Development"—Mansfield

"Relationship between R and D and Economic Growth"—Mansfield

SWARTHMORE COLLEGE
SWARTHMORE, PENNSYLVANIA 19081

Formal Program — None reported

Courses Offered

"Principles and Problems of Modern Technology"—J. D. McCrumm

"Superproblem—Global Energy Deployment"—C. Barus

Level — Undergraduate

Research Areas — None reported

RHODE ISLAND

BROWN UNIVERSITY
PROVIDENCE, RHODE ISLAND 02912

Formal Program — None reported

Courses Offered

"World Game Design Studio"—C. C. Wolf

"History of Science and Technology in America"—Dupree

"Science and Public Policy"—Dupree

"Industrial Organization"—Mark Schupack

Level — Graduate and Undergraduate

Research Areas — "Policy Science Program"—E. Hargrove

"Urban Analysis"—B. Chinitz, Kadaroff, Simons

"History of American Science and Technology"—H. Dupree

"Air Pollution Control"—J. Baird

"Science in the Federal Government"—Dupree

"Relation Between Market Structure and R&D"—Mark Schupack

RHODE ISLAND—Continued

EARTHRISE, INC.
PROVIDENCE, RHODE ISLAND 02901

Formal Program Earthrise, Inc.

Comments Earthrise is an educational corporation dedicated to promoting and developing the ideas of R. Buckminster Fuller and others, especially through advanced technology applications.

Research Areas "Rhode Island 2000"—C. Wolf
"The Rhode Island Game"—C. Wolf
"The Futures Task Force"—C. Wolf

SOUTH CAROLINA

CLEMSON UNIVERSITY
CLEMSON, SOUTH CAROLINA 29631

Formal Program None reported

Courses Offered

Public Administration Dept.
"Legislative Process"—Charles Dunn
"Problems of Public Administration"—Harold Albert
"National Defense Policy Analysis"—Harold Albert

Level Undergraduate

Research Areas "Private Sector Resistance to Normal Political Institutional Procedures and Outcomes When Water is an Issue"—Harold Albert

SOUTH DAKOTA

SOUTH DAKOTA SCHOOL OF MINES AND TECHNOLOGY
RAPID CITY, SOUTH DAKOTA 57701

Formal Program None reported

Courses Offered

"Environmental Engineering"
"Water Resources"
"Air Pollution"—B. L. Davis

Level Graduate and Undergraduate

Research Areas "Weather Modification"—R. A. Schleusener

TENNESSEE

UNIVERSITY OF TENNESSEE
KNOXVILLE, TENNESSEE 37916

Formal Program None reported

Courses Offered

University Studies
- "Technology and Society"—interdisciplinary course, involving ten lecturers from separate departments; A. S. Heilman and E. E. Stansbury (Co-Chairman)
- "Energy Needs and Our Environment"—F. Schmidt-Bleek

Engineering School
- "Urban Transportation Planning"—K. W. Heathington
- "Urban Systems"—W. L. Grecco
- "Intro to Environmental Engineering"—W. A. Drewry and K. E. Noll
- "Air Pollution and Air Resource Management"—K. E. Noll
- "Air Pollution"—K. E. Noll

Botany Dept.
- "Biology and Human Affairs"—Alan S. Heilman and A. J. Sharp

Planning School
- "Application of Remote Sensing to Planning"—Joseph M. Prochaska

Agricultural Economics Dept.
- "Agricultural and Rural Program Planning"—David W. Brown

Philosophy Dept.
- "Science, Technology and the Modern World: A Philosophical Approach"

Ecology Dept.
- "Principles of Ecology"—J. T. Tanner
- "Environmental Impact Statements"—Olson
- "Conservative Education"—A. Paul Wishart and James L. Bailey
- "Science and Environmental Education"—A. Paul Wishart
- "Teaching Natural Science"—A. Paul Wishart and Eugene Stansbury
- "Environmental Effects of Nuclear Technology"—P. F. Pasqua

Level Undergraduate and Graduate

Research Areas "Measuring and Minimizing the Social Cost of Environmental Pollution"—J. C. Burdick and W. A. Drewry

TENNESSEE—Continued

UNIVERSITY OF TENNESSEE—Continued

Research Areas—Continued

"Study of Composition of Municipal Solid Waste of the Wasteplex Study Region"—W. A. Drewry

"Professional Advisory Service Center (Civil Defense)"—J. R. McDowell

"Transportation Research Center Projects"—W. L. Grecco

"Safety Control of Small Dams in Tennessee"—B. A Tschantz

"Application of a Mathematical Theory for Urban Population Dynamics"—A. H. Eraslan

"Research on Power Plant Siting"—W. T. Snyder

"Flow Characteristics in Simulated Stenoses"—J. H. Forrester

"Regional Intervention Program—Tennessee Department of Mental Health"—J. N. Snider

"Urban Vehicle Design Team"—J. W. Hodgson, J. S. Tennant

"Teaching and Research in the Fields of Environmental Pollution"—M. W. Milligan

"Environmental Engineering Project—Tennessee Department of Public Health"—F. N. Peebles, Chairman of Advisory Board

"Blood Cell Separation Techniques"—C. J. Remenyik

"Appalachian Resources Project"—F. Schmidt-Bleek

"Environment Center"—F. Schmidt-Bleek

"Transportation Research Center"—Kenneth Heathington

"Applications of Remote Sensing Technology to Urban and Regional Planning"—J. M. Prochaska

"Applications of Geographic Base File Technology to the Development of Preparedness Plans for Natural Disasters"—J. M. Prochaska

"Science, Technology and State Government"—Hans E. Jensen

"The Political Behavior of Scientists and Engineers in Two Communities"—Arnett Elliott, Thomas Hood, and Jack Holmes

"The Role of State Government in Stimulating Development through Science and Technology"—A. B. Biscoe, Jr., B. B. Barnes, W. A. Goodwin, et al.

TENNESSEE—Continued

VANDERBILT UNIVERSITY
NASHVILLE, TENNESSEE 37203

Formal Program
(1) Socio-Engineering Program in Division of Socio-Technological Systems
(2) Provost's Science Group

Comments
(1) Socio-Engineering Program was formally established in 1972; both School of Engineering and other university faculty participate in this interdisciplinary program which offers courses and conducts research but currently does not award a degree, degree programs are also offered in the related fields of Biomedical Engineering, Environmental and Water Resources Engineering, and Engineering Management, all within the Division of Socio-Technological Systems.
(2) The "Science Group" meets occasionally to discuss science policy; meetings are held with government and research leaders; informed attitudes are developed for their influence on institutional and professors' actions, course content, etc.; first established in 1969.

Courses Offered

School of Engineering
"Dynamics of Change: The Impact of Technology"—B. D. Lichter, R. S. Goodrich, W. Y. Smith
"The Interaction of Science and Technology with Culture"—A. Marchant, C. E. Goshen
"Principles of Technology"—R. T. Nash
"Human Values and Technology"—M. P. Hodges
"Engineering Field Practice"—R. J. Beil
"Ecosystems"
"Case Studies in Current Socio-Technological Issues"
"Technology Assessment and Forecasting"
"Man and His Environment"—P. Krenkel

Chemistry Dept.
"Chemistry and the Problems of Society"—D. K. Wilson

Geology Dept.
"Geology and Man"—R. Stearns

Philosophy Dept.
"Technology and Human Values"—J. Lachs

Physics Dept.
"The Physics of our Environment"—J. Barach

Political Science Dept.
"Science and Public Policy"—A. Leiserson

TENNESSEE—Continued

VANDERBILT UNIVERSITY—Continued

Level	Undergraduate and Graduate
Research Areas	"Multi-detector Tomographic Scanner for Brain Tumor Localization"—King et al. "Community Mental Health Epidemiology"—Newbrough et al. "Toxic Factors in Uremia"—Ginn and Bourne, et al. "Research and Training in the Hydrologic and Hydraulic Aspects of Water Pollution Control"—Parker, Thackston, and Benedict "Past, Present, and Future Trends in Energy Usage"—Nash, J. Williamson "Role of Waterborne Mercury in the Incidence of Mental Illness"—Malaney "Communiversity: A Non-Profit Housing Development Program"—Butler, Ackley and Archibald "Development of Social Indicators"—Newbrough "Impacts of Public Policy on Urban and Regional Development"—Brown and Salamon "Development of a Computer-Based Planning System for Public Education"—Krolak, Brown and Wells "Alienation and Mediated Action"—John Lachs "Water Pollution"—Parker, Krenkel et al. "Technological Foundations of Social Change"—Coddington et al. "A Center for Coating Science & Technology"—James J. Wert "Thermal Pollution Problems"—Frank Parker "Mechanisms of Mercury Transformation in Bottom Sediments"—Peter A. Krenkel "Modernizing Management for Development"—Flournoy Coles "Development of Governmental Indices: Preliminary Study"—Nicholas Sieveking "Project on Technological Change in Regulated Industries"—Fred Westfield

TENNESSEE—Continued

VANDERBILT UNIVERSITY—Continued

Research Areas—Continued

"Hydro-Geochemistry in a Carbonate Basin—Geomorphic and Environmental Implications"—Richard Stearns

"A Field Ion Microscopy Investigation of the Atomic Processes Leading to Fatigue Crack Initiation in Metallic Materials"—Paul Packman

"The Cultural Assimilation of Science"—J. Compton

OAK RIDGE NATIONAL LABORATORY
OAK RIDGE, TENNESSEE 37830

Formal Program ORNL–NSF Environmental Program

Comments Interdisciplinary research program; organized in 1970 to perform comprehensive problem assessment as well as technical research and development; offers in-house continuing education program at MS, PhD level, primarily to enable scientists to improve their capacity to prepare environmental impact statements; also makes pre-doctoral and post-doctoral research appointments, including Presidential Interns; Director is John Gibbons.

Courses Offered

"Environmental and Resource Economics"—G. Gill

"Energy and Society: Central Station Power Plants"—S. E. Beall

"Ecological Approaches to Environmental Problem Assessment" –R. Burgess

"Air and Water Resources"—F. Gifford

Level Graduate and post-doctoral

Research Areas

"Electrical Energy and its Environmental Impacts"—J. L. Liverman

"Environmental Quality Indices"—J. L. Liverman

"Regional Environmental Systems Analysis"—J. L. Liverman

"Ecology and Analysis of Trace Contaminants"—J. L. Liverman

"Integration of Problem Oriented Environmental Research"—J. L. Liverman

TEXAS

AUSTIN COLLEGE
SHERMAN, TEXAS 75090

Formal Program None reported

Courses Offered

"Alternatives for Cultural Change"
"Policy Research"
"Physical Science"—J. L. Mackey

Level Undergraduate

Research Areas None reported

UNIVERSITY OF HOUSTON
HOUSTON, TEXAS 77004

Formal Program None reported

Courses Offered

"Science and Technology in American Life"—Swenson
Political Science Dept.
"Science and Public Policy"—Grafton
"Seminar in Science and Public Policy"—Grafton

Level Graduate and Undergraduate

Research Areas "Technology and the Creation of Federal Agencies"—Carl Grafton

RICE UNIVERSITY
HOUSTON, TEXAS 77001

Formal Program None reported

Courses Offered

Geology Dept.
"Engineering Geology"
Math Science Dept.
"Model Building"—Thrall, Owen and Wang
Political Science Dept.
"Science and Public Policy"—Gerhardt
"Alternative World Futures"—Doran
"Politics of the Environment"—Doran
"Technology and Society"—M. L. Rudee and J. Gerhardt
"Environmental Law"—J. V. Leeds
"Law and Society"—Hudspeth
"Resources Management"—Leeds
"Environmental Studies Project"—Characklis
"Modeling in Design and Resources Management"—Leeds
"Problems in Environmental Planning"—Characklis

Level Undergraduate and Graduate

Research Areas

"National Water Model"—G. Owen
"Mosquito Control Models"—R. Thompson
"Conflict Resolution"—R. Thrall
"Simulation of Social and Technological Futures"—Gordon et al.
"International Aspects of Thermal and Radiological Pollution from Nuclear Power Plants"—Doran and Leeds

TEXAS—Continued

RICE UNIVERSITY—Continued

Research Areas—Continued
"Technology and Society"—R. Bowen and W. E. Gordon
"Pollution and Environmental Management" —Leeds and Characklis
"Education for Engineers in Social Sciences" Bowen

SOUTHERN METHODIST UNIVERSITY
DALLAS, TEXAS 75222

Formal Program (1) Environmental Systems Program
(2) Societal and Public Systems

Comments Both programs are within the Institute of Technology; both are interdisciplinary, but are administered by a single department in each case; Institute of Technology offers a Bachelor of Applied Science in Public and Societal Systems; Director is Andrew P. Sage; programs were established in 1970 (1) and 1971 (2).

Courses Offered

Computer Science/Operations Research Dept.
"Introduction to the Fortran IV Programming Language"
"Scientific Programming"
"Deterministic Models in Operations Research"
"Probabilistic Models in Operations Research"

Information and Control Sciences Dept.
"Systems, Man and Society"
"Networks, Signals and Systems"
"System Dynamics and Control"
"Model Theory and Simulation"
"Energy and Power Systems"
"Model Theory and Simulation"
"Control Systems"
"Dynamics of Public and Societal Systems"
"Economic Systems Control and Modeling"
"Traffic Control Systems"
"Information Systems, Public Systems and Ecological Control"

Thermal and Fluid Sciences Dept.
"Energy, Technology and the Environment"—J. P. Holman
"Fundamentals of Thermal Sciences"
"Elementary Sanitation Science"
"Water Resources Engineering"
"Water Quality Analysis and Control"
"Origins of Atmospheric Contaminants"
"Fundamentals of Air Pollution Control"

School of Law
"Environmental Law"—S. Morris
"Science, Technology and Law"—H. Taubenfeld

TEXAS—Continued

SOUTHERN METHODIST UNIVERSITY—Continued

Level Graduate and Undergraduate

Research Areas

"Vortex Incineration of Solid Waste"—J. P. Holman
"Societal Dynamic Models"—A. P. Sage
"Study Group on the Societal Implications of Weather Modification Activities"—H. J. Taubenfeld

TEXAS A&M UNIVERSITY
COLLEGE STATION, TEXAS 77843

Formal Program Science, Technology and Public Policy Planning Group

Comments Established by the Vice President for Academic Affairs in 1972; group of 10 faculty members, chaired by Paul P. Van Riper of the Political Science Dept.; committee will consider the type of research and instructional program which the University ought to have in this area.

Courses Offered

Agricultural Economics Dept.
"Agricultural Policy"
"Principles of Technological Change"
"Methods of Technological Change"
Air Science Dept.
"World Military Systems"
Architecture Dept.
"Urban Design"
Biology Dept.
"Biology Forum"
"The Biology of Man's Environment"
Civil Engineering Dept.
"Highway Engineering"
"Water Resources Engineering"
"Sanitation and Public Health"
"Urban Traffic Facilities"
Economics Dept.
"Economics of Labor"
"International Trade and Finance"
"Public Finance"
"Human Resource Economics"
"Welfare Economics"
Educational Administration Dept.
"Educational-Government Relationships"
Educational Psychology Dept.
"Survey of Man's Knowledge"
Engineering Technology Dept.
"A Study of Modern Industry"
"Technology of Industry"
Environmental Design Dept.
"Systems of the Built Environment"

TEXAS—Continued

TEXAS A&M UNIVERSITY—Continued

Courses Offered—Continued
Forest Science Dept.
"Forest Policy"
Geography Dept.
"Man's Impact on His Environment"
History Dept.
"American Economic History"
"Recent American Cultural and Intellectual History"
Industrial Engineering Dept.
"Labor and Industry"
Interdisciplinary Education Dept.
"History and Philosophy of Cooperative Extension"
Journalism Dept.
"Science and Technical Journalism"
Management Science Dept.
"Business and the Community"
"Business and Society"
Military Science Dept.
"First Year Military Science"
Naval Science Dept.
"Naval Organization and Management"
Nuclear Engineering Dept.
"Technology Assessment"
Philosophy Dept.
"Technology and Human Values"
"Philosophy of Science"
"Philosophy of the Political Order"
Physics Dept.
"Selected areas of physics"
Political Science Dept.
"Strategy and Arms Control in the Nuclear Age"
Poultry Science Dept.
"Environmental Physiology"—J. R. Cain
Range Science Dept.
"Range Management Practices, Policies and Administration"
Sociology Dept.
"Science and the City"—A. Schaffer
Urban and Regional Planning Dept.
"Urban Planning"
Wildlife Science Dept.
"Wildlife and the Changing Environment"

Level Undergraduate and Graduate

Research Areas *Texas Engineering Experiment Station*
Comprehensive Health Planning—Kentucky—George J. Mann
Regional Hospital Study—Frederick J. Trost
Regional Experimental Program for Educational Computer Utilization—John C. Calhoun

TEXAS—Continued

TEXAS A&M UNIVERSITY—Continued

Research Areas—Continued

Decision Analysis on Water Resources Planning and Management for an Arid Metropolitan Center in West Texas—Chia S. Shih

Computer Graphics Curriculum Development—James H. Earle

Management of Industrial Waste Discharges in Complex Estuarine Systems—Roy W. Hann, Jr.

Training in Water Supply and Pollution Control—William B. Davis

Pollution Discharge into the Houston Ship Channel—Roy W. Hann, Jr.

Waste Management Study—Roy W. Hann, Jr.

Comprehensive Land Use Analysis of the Texas Gulf Coast—John Miloy

Offshore Port Study—James R. Bradley

Interdisciplinary Space-Oriented Research in the Physical, Life and Engineering Sciences—John W. Rouse

College of Sciences

Behavioral Toxicology Induced by Insecticides—Herman Kleerekoper

Detection of Air Pollution—Gilbert N. Plass

Radiological Safety—Harry E. Whitmore

College of Geosciences

Environmental Quality Research—Earl F. Cook

Folk Use of Medicinal Plants—Clarissa T. Kimber

Law and the Marine Resources of the Gulf of Mexico—Eliezer Ereli

Statistical Analyses of Climatic Elements in Texas and Their Applications to Crop Production—John F. Griffiths

Solar Radiation Influencing Biological Primary Productivity in Antarctic Waters—Guy A. Franceschini

The Urban Modification of the Atmospheric and Hydrological Environment—John F. Griffiths

Hydrologic Evaluation of Weather Modification Experiment—Concho River Basin—Robert A. Clark

Survey of the Gulf of Mexico—Oceanography—Richard A. Geyer

Oceanic Environmental Quality—Gulf of Mexico & Caribbean—William M. Sackett

TEXAS—Continued

TEXAS A&M UNIVERSITY—Continued

Research Areas—Continued

Texas Agricultural Experiment Station

Realized and Projected Benefits from Development of the Pase Del Rio, San Antonio River—Warren L. Trock

Texas Transportation Institute

An Examination of Basic Geometric Design Criteria as They Relate to Safe Operations on Modern High Speed Highways—John C. Glennon

Air Regulations Study—Hoy A. Richard

Definition of Relative Importance of Factors Affecting Vehicle Skids—Randolph T. Gregory

The Relation of Side Slope Design to Highway Safety—Charles J. Keese

Pedestrain Injury by Vehicles—Hayes E. Ross

Freeway Control and Information Systems—William R. McCasland

Roadway Illumination Systems—Neilon J. Rowan

Diagnostic Studies of Highway Communication Systems—Neilon J. Rowan

Optimization Flow in an Urban Freeway Corridor—William R. McCasland

Waco Transportation Study—Vergil G. Stover

Urban Travel Forecasting—Vergil G. Stover

Urban Corridor Demonstration—William R. McCasland

Evaluation of the Roadway Environment by Dynamic Analysis of the Interaction of Vehicle, Passenger, and Roadway—Hayes E. Ross, Jr.

Social, Economic and Environmental Factors in Highway Decision-making—William G. Adkins

Texas Mass Transportation—Gilbert S. Bridges

Transportation Needs Study—G. Sadler Bridges

Establishment and Management of Roadside Vegetation—Wayne G. McCully

Urban Highway Traffic Noise Reduction—Neilon J. Rowan

College of Engineering

Investigation of the Hydraulic Characteristics and Dynamic Balance of Tidal Inlets Along the Texas Gulf Coast—Robert M. Sorensen

Scour of Gulf Coast Sand Beaches Due to Wave Action in Front of Sea Walls and Dune Barriers—Robert E. Schiller

TEXAS—Continued

TEXAS A&M UNIVERSITY—Continued

Research Areas—Continued

Environmental Evaluation of a Seacoast for Tourism—Recreational Development—Clare A. Gunn

Mariculture of Commercial Crustaceans and Fishers on the Upper Texas Coast—Robert K. Strawn

College of Liberal Arts

Science Development in Economics—John W. Aller

Effects of DDT and Parathion on Behavior—Albert J. Casey

Urban Transportation and Central City Decay—Albert Schaffer

Technical Information and Policy on Coastal Resources—Albert Schaffer

College of Veterinary Medicine

A Research and Training Program in Tropical Veterinary Medicine—Fred D. Maurer

College of Architecture

Port and Harbor Development System—Russell L. Stogsdill

Other University Offices

Environmental Systems Development Research—A. D. Suttle, Jr.

NORTH TEXAS STATE UNIVERSITY
DENTON, TEXAS 76203

Formal Program None reported

Courses Offered "Economics of Technological Innovation"—Martin J. Davidson

Level Graduate

Research Areas None reported

THE UNIVERSITY OF TEXAS AT AUSTIN
AUSTIN, TEXAS 78712

Formal Program Lyndon B. Johnson School of Public Affairs

Comments Two-year master's degree program; established in 1970; heavily oriented toward questions of science policy analysis; interdisciplinary program, with faculty and students from the fields of engineering, law, life sciences, and the physical sciences; large part of the curriculum involves interdisciplinary research seminars dealing with science and public policy problems; Dean is John A. Gronouski.

TEXAS—Continued

THE UNIVERSITY OF TEXAS AT AUSTIN—Continued

Courses Offered

LBJ School of Public Affairs
"Priorities for Energy R&D—Jurgen Schmandt
"Implications of Science and Technology for Public Affairs"—Jurgen Schmandt
"State Planning for Nuclear Power"—Marlan Blissett
"The Impact of Environmental Impact Statements"—Jerry Rohlich
Government Dept.
"Science in Government and International Affairs"—W. A. Noyes, Jr.
Graduate School of Business
"Management of Technical Innovation"—Bright
"Technology Forecasting and Assessment"—Bright
"Research Management"—Shapiro
Chemistry Dept.
"Science and Contemporary Social Problems"
"Science and the Environment"—Wade and Monti

Level Undergraduate and Graduate

Research Areas "R&D Capabilities Related to the Delivery of Social Services"—Marlan Blissett and Jurgen Schmandt
"Technology Forecasting of Computer Capability"—Knight

UTAH

UTAH STATE UNIVERSITY
LOGAN, UTAH 84321

Formal Program None reported

Courses Offered

"Public Policy and the Environment"—John Baden

Level Undergraduate

Research Areas "Combining Scientific Data and Human Values for Multiple Use Planning on the National Fronts"—John Baden

UNIVERSITY OF UTAH
SALT LAKE CITY, UTAH 84112

Formal Program None reported

Courses Offered

Engineering Dept.
"Technology for the Non-Technological Student"—Noel de Nevers

Level Undergraduate

Research Areas None reported

VERMONT

WINDHAM COLLEGE
PUTNEY, VERMONT 05346

Formal Program None reported

Courses Offered

Social Relations Dept.
"Technology and Culture"—David Moe
"Advanced Industrial Society and the Crises of Authority"
Biology Dept.
"Conservation of Natural Resources"—Arthur Westing

Level Undergraduate

Research Areas "The Ecological Impact of American Military Operations in Vietnam"—Arthur Westing

VIRGINIA

UNIVERSITY OF VIRGINIA
CHARLOTTESVILLE, VIRGINIA 22901

Formal Program Center for the Study of Science, Technology and Public Policy

Comments Established in 1968 with major support from the National Science Foundation; problem-oriented, interdisciplinary focus; based in the School of Law with University-wide dimensions; research and teaching activities; an Administrative Committee, appointed by the University Provost, advises the Director on policy matters and assists in coordinating the activities and requirements of the Center with the various schools and departments; Director is Mason Willrich.

Courses Offered

Center courses
"Environment and the Law in Virginia"—Howard and Barnes
"Seminar on Transplanted and Artificial Organs"—Harry S. Abram, James F. Childress, Frederic B. Westervelt, Jr., and Mason Willrich
"Seminar on Ethical Drugs"—Richard A. Merrill, William M. O'Brien, and Kenneth G. Elzinga
"Nuclear Energy and Public Policy"—Mason Willrich
"Technology and Social Policy"—Mason Willrich, Thomas Hunter, Louis Rader
"Environmental Decision-Making"—Mason Willrich, David Little
"Scientific Aspects of Technological Policy"—J.V. Noble
"Science, Technology and Public Policy"—Mason Willrich
"Technological Systems and their Impact on Modern Society"—L. Rader

VIRGINIA—Continued

UNIVERSITY OF VIRGINIA—Continued

Courses Offered—Continued

Government Dept.

"Processes of Change and Study of the Future"—Paul T. David

Engineering School

"Technology Assessment"—T. Graham Hereford

Dept. of Environmental Sciences

"Population, Resources and the Environment"—S. Fred Singer

Level — Graduate and Undergraduate

Research Areas

"Electric Facilities Siting"—Mason Willrich
"Civilian Nuclear Policy"—Mason Willrich
"Population and Resources"—S.F. Singer
"Virginia's Urban Corridor"—A.E. Dick Howard, Dennis W. Barnes, Leigh E. Grosenick, and Jerry L. Mashaw
"Research on Transportation"—Jerry L. Mashaw
"Environmental Quality in Virginia"—Dennis W. Barnes
"Research on Ethical Drugs"—Richard A. Merrill
"Nuclear Energy and World Order"—Mason Willrich

WASHINGTON

UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON 98105

Formal Program

(1) Social Management of Technology and Marine Affairs
(2) Natural Resources and Environmental Option of the Graduate School of Public Affairs

Comments

(1) Program was established in the College of Engineering in 1970; offers graduate courses and interdisciplinary research activities; Director is Edward Wenk, Jr.
(2) Major field in the Master of Public Administration degree program; emphasizes resource and environmental policy issues; curricula draws on courses established in several divisions of the university in resource policy.

Courses Offered

"Social Management of Technology"—Edward Wenk, Jr.
"Marine Affairs"—Edward Wenk, Jr.
"Science and Public Policy"—Dael Wolfle
"Natural Resources Public Policy Seminar"—interdisciplinary staff

WASHINGTON—Continued

UNIVERSITY OF WASHINGTON—Continued

Courses Offered—Continued
"American Foreign Policy Seminar"—Brewster C. Denny
"Physics and Society"
"Education and Public Policy Issues in the Development of Human Talent"—Dael Wolfle
"Social Policy Analysis"—Williams
Numerous courses on the economics of natural resource management.

Level Graduate

Research Areas "Social Management of Technology"—Edward Wenk, Jr., Robert Flesgle, Kenneth Dolbeare, Robert W. Day, Ronald Geballe, James A. Crutchfield, Ralph W. Johnson, Dael Wolfle, and John C. Narver.
"Marine Affairs"—Edward Wenk, Jr.

WEST VIRGINIA

WEST VIRGINIA INSTITUTE OF TECHNOLOGY
MONTGOMERY, WEST VIRGINIA 25136

Formal Program None reported

Courses Offered
"Impact of Technology on the Environment"—Ernest W. Mellow

Level Undergraduate

Research Areas "Air Pollution Monitoring"—E. W. Mellow
"Evaluation of Energy Policy"—E. W. Mellow

WEST VIRGINIA UNIVERSITY
MORGANTOWN, WEST VIRGINIA 26506

Formal Program None reported

Courses Offered
"Impact of Technology on Society"—D. T. Worrell and R. R. Haynes

Level Undergraduate

Research Areas None reported

WISCONSIN

UNIVERSITY OF WISCONSIN
MADISON, WISCONSIN 53706

Formal Program Institute for Environmental Studies

Comments Major campus unit; offers courses and carries out research Programs.
Further activities of the university not formally associated with above program; Graduate School Dean serves as the Wis-

WISCONSIN—Continued

UNIVERSITY OF WISCONSIN—Continued

Comments—Continued

consin Governor's science advisor; Graduate School's University-Industry Research Program assists industry and government in their contacts with the research faculty on campus, has liaison role in science policy matters, and is establishing new project to assist with the science information needs of the Wisconsin State Legislature.

Courses Offered

Engineering College
- "Engineering in Area Studies"—Nadler-Barry
- "Technology and Society"—Robinson
- "Technology-Society-Environment"
- "Process Discovery"—Rudd

Environmental Studies
- "Technology, Society and the Future"—Richardson
- "Science and Government"
- "Ecological Alternatives for Society"
- "Man-Use of the Soil"

Physics Dept.
- "Physics in the Contemporary World: A Seminar for Laymen"

History of Science Dept.
- "Social Aspects of the Development of Science"—Victor Hilts
- "The Impact of Applied Science"
- "The Automobile and Society"

Sociology Dept.
- "Sociology of Science"—W. O. Hagstrom

Law School
- "Law, Technology and Society"—Stedman

Political Science Dept.
- "Science and Government"

Level: Graduate and Undergraduate

Research Areas
- "Studies in the Sociology of Science"—W. O. Hagstrom
- "Columbia Power Plant Monitoring Project"
- "Lake Wingra Ecological System Study"
- "Marine Studies Center and Sea Grant Program"
- "Land Use Policies" (problem definition seminar)
- "Feasibility Study of Metal Resources Recovery and Recycling"
- "Energy Usage" (problem definition seminar)

WISCONSIN—Continued

UNIVERSITY OF WISCONSIN—STEVENS POINT
STEVENS POINT, WISCONSIN 54481

Formal Program None reported

Courses Offered

"Environmental Economics"—T. Rothrock and D. Christ'e
"Philosophy of Science"—J. Vollrath
"Politics and the Environment"—R. Christofferson
History Dept.
"U.S. Resource Development and Policy"—M. Olsen
"History of Science (Grecian to Galileo)"—R. Artigiani
"History of Science (Since Galileo")—R. Artigiani
Philosophy Dept.
"Environmental Ethics"—J. Callicott

Level Undergraduate

Research Areas None reported

WYOMING

No science policy programs, courses or research areas reported.

CANADA

UNIVERSITY OF BRITISH COLUMBIA
VANCOUVER 8, BRITISH COLUMBIA

Formal Program None reported

Courses Offered
History Dept.
"History of the Natural Sciences in Modern Times"—S. Straker
"Philosophy of Science"—E. Levy
"Science and Society in the Modern West"—S. Straker, R. Unger, W. Mullins

Level Undergraduate

Research Areas "Vancouver Simulation Project"—C. S. Hollings, Michael Goldberg

DALHOUSIE UNIVERSITY
HALIFAX, NOVA SCOTIA

Formal Program None reported

Courses Offered
"Science and Government"—P. Aucoin
"Politics of the Environment"—R. Daly
"Sociology of Science and Ideas"—D. Elliott

Level Undergraduate and Graduate

Research Areas "Health Science Policy in Canada"—P. Aucoin
"Forest Resource Management"—A. P. Pross

McGILL UNIVERSITY
MONTREAL 101, QUEBEC

Formal Program None reported

Courses Offered None reported

Research Areas "Biology and Human Behavior"—S. J. Noumoff

UNIVERSITY OF MONTREAL
MONTREAL, QUEBEC

Formal Program None reported

Courses Offered
Political Science Dept.
"Science and Technology in International Relations, 19th and 20th Centuries"—Schroeder—Gudehus
"Transnational Relations: International Scientific Relations"—Schroeder—Gudehus
"Science Policy in Canada"—Garigue

CANADA—Continued

UNIVERSITY OF MONTREAL—Continued

Level Undergraduate and Graduate

Research Areas
"Scientific Research and Federalism (Weimar Germany)"—Schroeder—Gudehus
"Foreign Policy Making in the Field of Science and Technology"—Schroeder—Gudehus

QUEEN'S UNIVERSITY
KINGSTON, ONTARIO

Formal Program None reported

Courses Offered
"The Politics of Science"—J. W. Grove
"Nuclear R&D in Canada"—N. Franks
"Ocean Management"—G. Alexandrowicz
"The Canadian North"—N. Orvik

Level Graduate

Research Areas
"Communications in the North"—J. C. Beal
"The Political Decisions Regarding Nuclear Power Development in Canada and the United Kingdom"—N. Franks
"Science Policy in Canada"—J. W. Grove

UNIVERSITY OF TORONTO
TORONTO, ONTARIO

Formal Program None reported

Courses Offered
Political Economy Dept.
"Science and Government"—S. Lakoff, J. H. Dales, and P. Solomon
"Science, Technology and Public Policy"—S. A. Lakoff and P. Solomon
"Political Economy of Health in Canada"—J. T. McLeod
Sociology Dept.
"Sociology of Science"—J. Reitz
"Science and Modern Society"—J.—Reitz

Level Undergraduate and Graduate

Research Areas
"Political Theory of Scientific Society"—Lakoff
"Science and Industrialization in USSR"—Solomon
"Toward a Theory of Applied Social Science"—Reitz
"Environmental Studies (Water Management)"—J. Dales
"International Maritime Policy"—D. M. Johnston

CANADA—Continued

UNIVERSITY OF WATERLOO
WATERLOO, ONTARIO

Formal Program None reported

Courses Offered
Dept. of Management Sciences
"Research and Development Strategies"—F. E. Burke

Level Undergraduate and Graduate

Research Areas
"Types of Innovation Processess"—F. E. Burke
"Information Aspects of Innovative Learning"—F. E. Burke
"Constraint Forecasting Models for Long-Range Science"—F. E. Burke and Straters
"Predictions of Later Success of Scientists from Quantity and Types of Earlier Success"—F. E. Burke and K. Jegr
"Employment Effects of Different Types of Technical Change"—F. E. Burke and Don J. Clough

APPENDIX

PROGRAMS FUNDED BY THE NATIONAL SCIENCE FOUNDATION UNIVERSITY SCIENCE PLANNING AND POLICY PROGRAM GRANTS

University	Amount	Duration (years)	Expiration date
California (Berkeley)	89,600	3.0	July 1, 1973
Cornell	217,000	3.0	July 1, 1974
George Washington University	116,900	3.0	July 1, 1975
Harvard	222,100	3.0	July 1, 1973
Illinois	150,000	3.0	July 1, 1972
Indiana	87,000	4.0	July 1, 1973
Johns Hopkins	86,900	1.5	July 1, 1973
Massachusetts Institute of Technology.	108,200	5.0	July 1, 1973
Michigan, University of	67,800	1.0	Nov. 1, 1972
Rockefeller	41,400	2.0	Dec. 31, 1972
Stanford	297,600	3.0	July 1, 1973
State University of New York at Albany.	39,800	2.0	Sept. 1, 1972
Virginia	150,000	4.0	July 1, 1973
Washington	272,300	2.0	July 1, 1973

Source: National Science Foundation, June 30, 1972.